DVP-NC600

RMT-D130A/D130O/D130P

SERVICE MANUAL

Self Diagnosis Supported model

US Model
Canadian Model
AEP Model
UK Model
Australian Model
PX Model

SPECIFICATIONS

System

Laser	Semiconductor laser
Signal format system	NTSC PAL (AEP, UK)

Audio characteristics

Frequency response	DVD (PCM 96 kHz): 2 Hz to 44 kHz (±1.0 dB) DVD (PCM 48 kHz): 2Hz to 22kHz (±0.5dB) CD: 2 Hz to 20 kHz (±0.5 dB)
Signal-to-noise ratio (S/N ratio)	115 dB (LINE OUT L/R (AUDIO) 1/2 jacks only)
Harmonic distortion	0.003%
Dynamic range	DVD: 103 dB CD: 99 dB
Wow and flutter	Less than detected value (±0.001% W PEAK)

The signals from LINE OUT L/R (AUDIO) 1/2 jacks are measured. When you play PCM sound tracks with a 96 kHz sampling frequency, the output signals from the DIGITAL OUT (COAXIAL and OPTICAL) jacks are converted to 48 kHz sampling frequency.

Outputs

Jack name	Jack type	Maximum output level	Load impedance
DIGITAL OUT (OPTICAL)	Optical output jack	-18 dBm	Wave length 66 nm
DIGITAL OUT (COAXIAL)	Phono jack	0.5 Vp-p	75 ohms terminated
LINE OUT L/R (AUDIO) 1/2	Phono jack	2 Vrms (50 kilohms)	Over 10 kilohms
LINE OUT (VIDEO)	Phono jack	1.0 Vp-p	75 ohms, sync negative
S VIDEO OUT	4-pin mini DIN	Luminance signal: 1.0 Vp-p Color signal: 0.286 Vp-p (NTSC) 0.3 Vp-p (PAL)	75 ohms, sync negative 75 ohms terminated
COMPONENT VIDEO OUT (Y, P_B, P_R) (US, CND, PX)	Phono jack	Y: 1.0 Vp-p P_B, P_R: 0.7 Vp-p	75 ohms, sync negative 75 ohms terminated

General

Power requirements	120V AC, 60 Hz (US, CND) 110 to 240V AC, 50/60 Hz (PX) 220 to 240V AC, 50/60 Hz (AEP, UK, AUS)
Power consumption	13 W 15 W
Dimensions (approx.)	430 × 108 × 411 mm (17 × 4 3/8 × 16 1/4 in.) (width/height/depth) incl. projecting parts
Mass (approx.)	5.4 kg (11 lb 14 oz)
Operating temperature	5°C to 35°C (41°F to 35°F)
Operating humidity	25% to 80%

Supplied accessories

Check that you have the following items:
- Audio/video cord (pinplug × 3 ←→ pinplug × 3) (1)
- Remote commander (remote) RMT-D130A (1) (US, CND, PX)
  RMT-D130O (1) (AUS)
  RMT-D130P (1) (AEP, UK)
- Size AA (R6) batteries (2)
- A plug adaptor is included with some models.

Specifications and design are subject to change without notice.

ENERGY STAR® is a U.S. registered mark. As an ENERGY STAR® Partner, Sony Corporation has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

- Abbreviation
  AUS : Australian
  CND : Canadian

CD/DVD PLAYER

SONY®

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are “pinched” or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, “metallized” knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

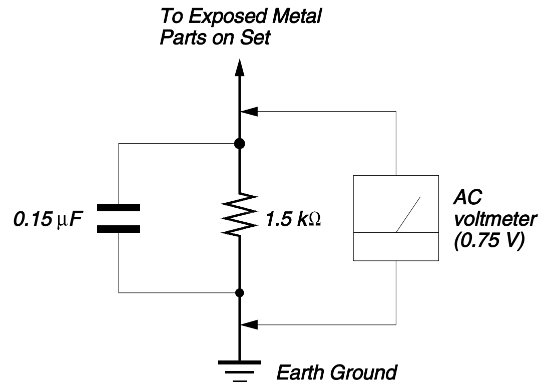


Fig. A. Using an AC voltmeter to check AC leakage.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The “limit” indication is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

CAUTION : VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.

ADVARSEL : SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING. UNDGÅ UDSÆTTELSE FOR STRÅLING.

VORSICHT : SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN.

VARO ! : NÄKYVÄÄ JA NÄKYMÄTÖN AVATTAESSA OLET ALTTIINA LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

VARNING : SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. STRÅLEN ÄR FARLIG.

ADVARSEL : SYNLIG OG USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES. UNNGÅ EKSPONERING FOR STRÅLEN.

FIGYELEM : A BURKOLAT MEGBONTÁSAKOR LÁTHATÓ ÉS LÁTHATATLAN LÉZERSUGÁR LÉPHET KI A KÉSZÜLÉKBŐL ÓVAKODJON A KÖZVETLEN LÉZERSUGÁRTÓL

CLASS 1 LASER PRODUCT
LASER KLASSE 1
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

CLASS 3B LASER
LUOKAN 3B LASER
LASERKLASS 3B

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 25 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

CAUTION:

The use of optical instrument with this product will increase eye hazard.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

TABLE OF CONTENTS

Section *Title* *Page*

Service Note 4

1. GENERAL

Index to Parts and Controls 1-1
Getting Started 1-3
Hookups 1-3
Playing Discs 1-7
Searching for a Scene 1-10
Viewing Information About the Disc 1-10
Sound Adjustments 1-11
Enjoying Movies 1-12
Using Various Additional Functions 1-12
Settings and Adjustments 1-14
Additional Information 1-16

2. DISASSEMBLY

2-1. Upper Case, Reinforcement (C) Removal 2-1
2-2. Front Panel Section Removal 2-1
2-3. Rear Panel Removal 2-1
2-4. MB-98 Board Removal 2-1
2-5. AV-57 Board Removal 2-2
2-6. ER-16 Board Removal (AEP, UK) 2-2
2-7. Table Ass'y Removal 2-2
2-8. Chassis Ass'y 2-2
2-9. CN-142 Board Removal 2-3
2-10. Loading Motor Ass'y (M851) Removal 2-3
2-11. BU Holder Ass'y Removal 2-3
2-12. Optical Pick-up Removal 2-3
2-13. Power Block Removal 2-4
2-14. Internal Views 2-5
2-15. Circuit Boards Location 2-6

3. BLOCK DIAGRAMS

3-1. Overall Block Diagram 3-1
3-2. RF/Servo Block Diagram 3-3
3-3. Signal Processor Block Diagram 3-5
3-4. System Control Block Diagram 3-7
3-5. Video Block Diagram 3-9
3-6. Audio Block Diagram 3-11
3-7. Interface Control Block Diagram 3-13
3-8. Power 1 Block Diagram 3-15
3-9. Power 2 Block Diagram 3-17

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. Frame Schematic Diagram 4-3
4-2. Printed Wiring Boards and Schematic Diagrams 4-7
MB-98 Printed Wiring Board 4-7
MB-98 (RF AMP, SERVO) Schematic Diagram 4-11
MB-98 (ARP, SERVO DSP) Schematic Diagram 4-13
MB-98 (AV DECODER) Schematic Diagram 4-15
MB-98 (BNR) Schematic Diagram 4-17
MB-98 (DRIVE) Schematic Diagram 4-19
MB-98 (SYSTEM CONTROL) Schematic Diagram 4-21
MB-98 (CLOCK GENERATOR) Schematic Diagram 4-23
MB-98 (AUDIO DSP, D/A CONVERTER) Schematic Diagram 4-25
AV-57 Printed Wiring Board 4-29
AV-57 (VIDEO BUFFER) Schematic Diagram 4-31
AV-57 (AUDIO AMP) Schematic Diagram 4-33
ER-16 Printed Wiring Board (AEP, UK) 4-35
ER-16 Schematic Diagram (AEP, UK) 4-37
IF-81 Printed Wiring Board 4-39
IF-81 Schematic Diagram 4-41
FL-119, FR-178, SW-353 Printed Wiring Boards 4-43
FL-119 (FUNCTION SWITCH), FR-178 (FUNCTION SWITCH), SW-353 (FUNCTION SWITCH) Schematic Diagram 4-45
CN-142, LM-63 Printed Wiring Board 4-47
CN-142 (CONNECTION), LM-63 (LOADING MOTOR) Schematic Diagram 4-49
SE-122, TM-125 Printed Wiring Board 4-51
SE-122 (SENSOR), TM-125 (TURNTABLE MOTOR) Schematic Diagram 4-53
MPN4801 Printed Wiring Board (US, CND) 4-55
MPN4801 Schematic Diagram (US, CND) 4-57
MPN4901 Printed Wiring Board (AEP, UK, AUS, PX) .. 4-59
MPN4901 Schematic Diagram (AEP, UK, AUS, PX) 4-61

5. IC PIN FUNCTION DESCRIPTION

5-1. System Control Pin Function (MB-98 Board IC103) 5-1

6. TEST MODE

6-1. General Description 6-1
6-2. Starting Test Mode 6-1
6-3. Syscon Diagnosis 6-1
6-4. Drive Auto Adjustment 6-5
6-5. Drive Manual Operation 6-7
6-6. Mecha Aging 6-10
6-7. Emergency History 6-10
6-8. Version Information 6-11
6-9. Video Level Adjustment 6-11
6-10. IF CON Self Diagnostic Function 6-11
6-11. Troubleshooting 6-18

7. ELECTRICAL ADJUSTMENT

7-1. Power Supply Check 7-1
  1. MPN4801/MPN4901 Boards 7-1
  2. +11 V Adjustment 7-1
  3. +5 V Adjustment 7-1
  4. –11 V Adjustment 7-1
7-2. Adjustment of Video System 7-2
  1. Video Level Adjustment (MB-98 Board) 7-2
  2. Checking S Video Output S-Y 7-2
  3. Checking S Video Output S-C 7-2
  4. Checking Component Video Output Y 7-2
  5. Checking Component Video Output B-Y 7-3
  6. Checking Component Video Output R-Y 7-3
  7. Checking RGB Output R 7-3
  8. Checking RGB Output G 7-3
  9. Checking RGB Output B 7-4
7-3. Adjustment Related Parts Arrangement 7-6

8. REPAIR PARTS LIST

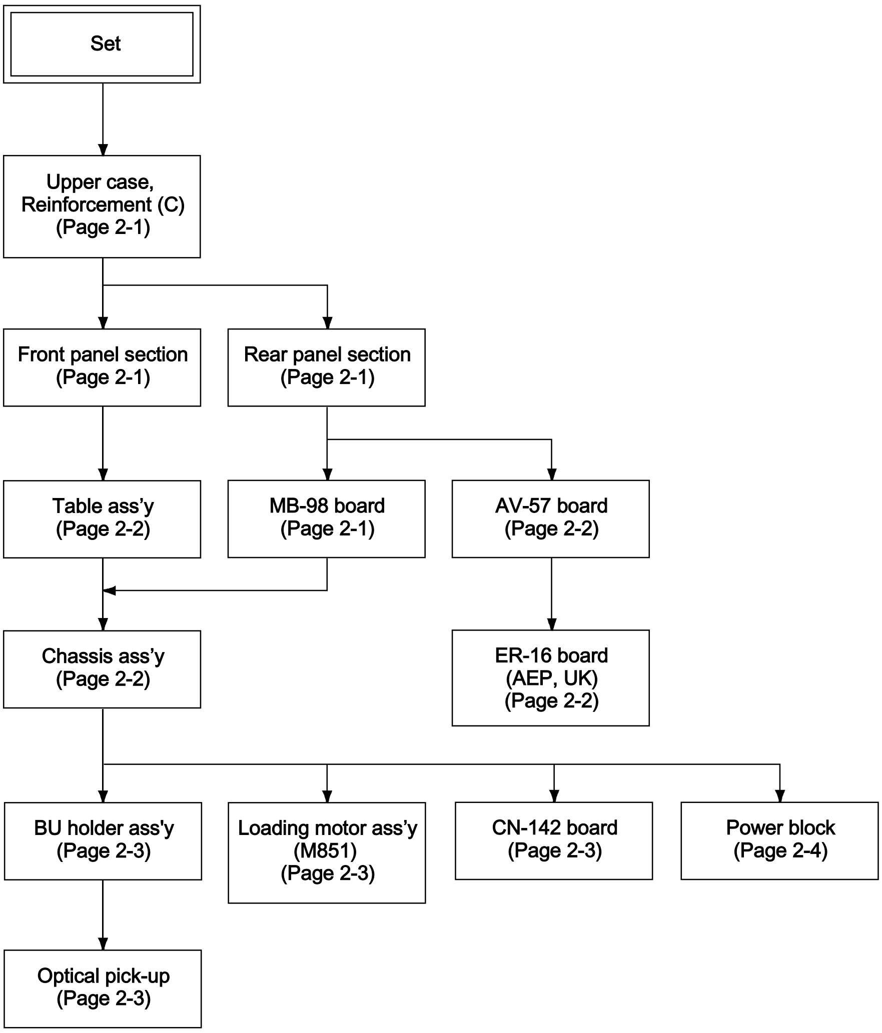
8-1. Exploded Views 8-1
  8-1-1. Main Assembly 8-1
  8-1-2. Front Panel Assembly 8-3
  8-1-3. Table Assembly 8-4
  8-1-4. Chassis Assembly 8-5
8-2. Electrical Parts List 8-6

- Abbreviation
  AUS : Australian
  CND : Canadian

SERVICE NOTE

1. DISASSEMBLY

- This set can be disassembled in the order shown below.


Set
Upper case, Reinforcement (C) (Page 2-1)
Front panel section (Page 2-1)
Rear panel section (Page 2-1)
Table ass'y (Page 2-2)
MB-98 board (Page 2-1)
AV-57 board (Page 2-2)
Chassis ass'y (Page 2-2)
ER-16 board (AEP, UK) (Page 2-2)
BU holder ass'y (Page 2-3)
Loading motor ass'y (M851) (Page 2-3)
CN-142 board (Page 2-3)
Power block (Page 2-4)
Optical pick-up (Page 2-3)

2. NOTE ON REMOVE THE UPPER CASE

1) Remove seven tapping screws. (See Fig. 1)
2) Open the side of case. (See Fig. 1)
3) Remove the upper case as lift in the direction of arrow.

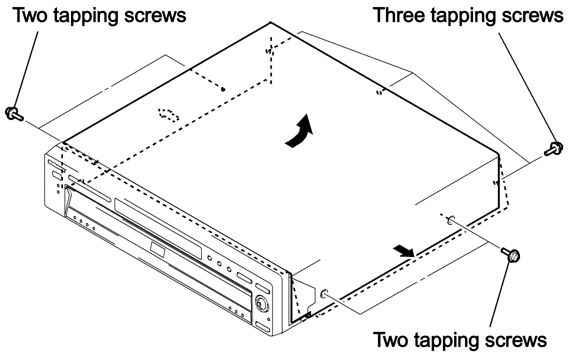

Two tapping screws
Three tapping screws
Two tapping screws

Fig. 1

3. DISC REMOVAL PROCEDURE

1) Insert a flat-blade screwdriver into a hole at the bottom, and rotare the cam gear in the direction of arrow Ⓐ. (See Fig. 2)

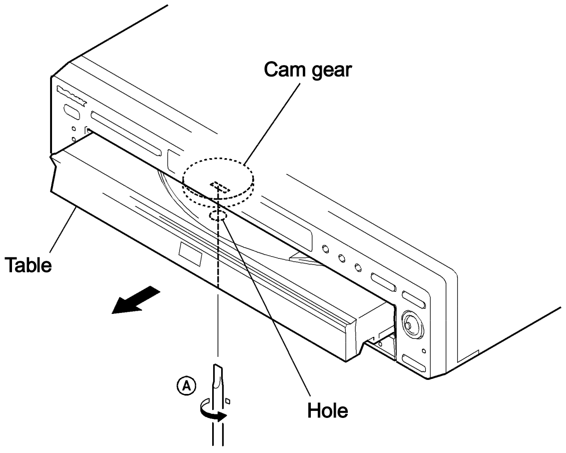

Cam gear
Table
Ⓐ
Hole

Fig. 2

4. NOTE ON MOUNTING GEARS

1) Mount the gear (U/D). (See Fig. 3.)
2) Rotate the gear (U/D) in the direction of arrow. (down position) (See Fig. 3.)

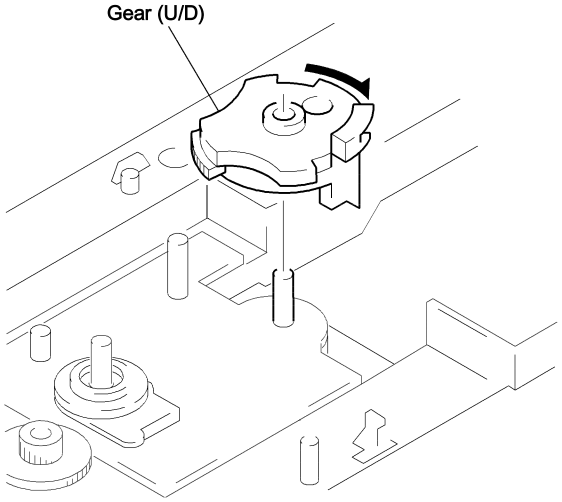


Fig. 3

3) Align triangle marks of the rotary encoder. (See Fig. 4.)
4) Escape the set lever. (See Fig. 4.)
5) Connect the boss of the gear (main) with the groove of the rotary encoder and mount the gear (main). (See Fig. 4.)

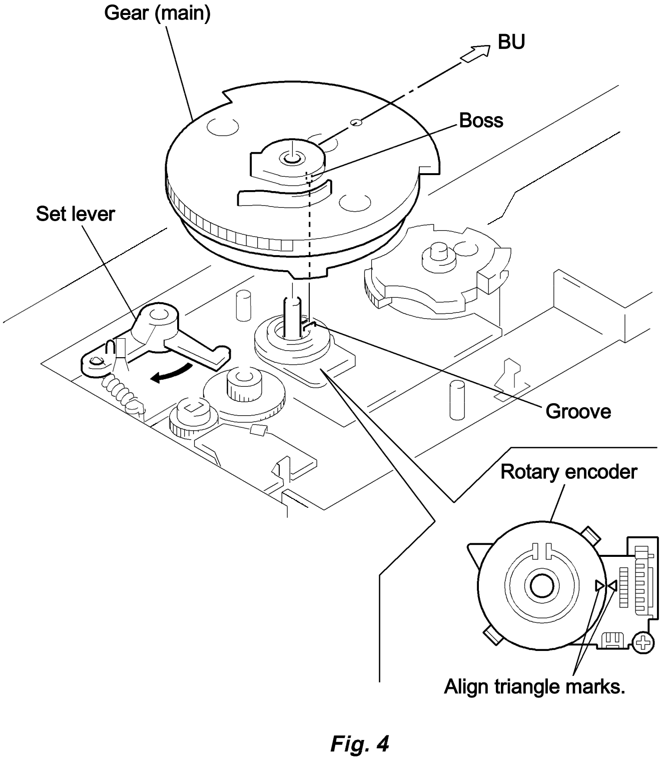

Gear (main)
BU
Boss
Set lever
Groove
Rotary encoder
Align triangle marks.

Fig. 4

6) Mount the lock lever (See Fig. 5.)
7) Mount the spring (lock lever). (See Fig. 5.)

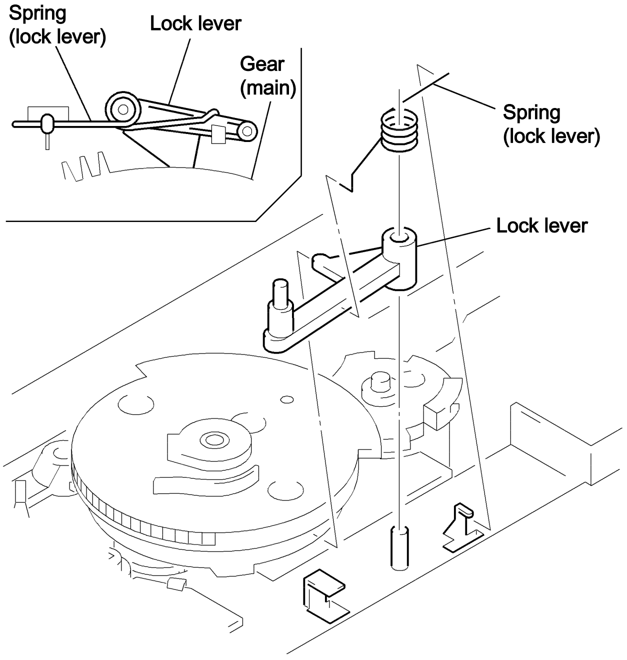

Spring
(lock lever)
Lock lever
Gear
(main)
Spring
(lock lever)
Lock lever

Fig. 5

8) Rotate the gear (main) in the direction of arrow Ⓐ by 90° turn. (Gear (U/D) is up position.) (See Fig. 6.)
9) Mount the Gear (rev). (See Fig. 6.)
10) Fix three stopper washers on the groove of shafts. (See Fig. 6.)

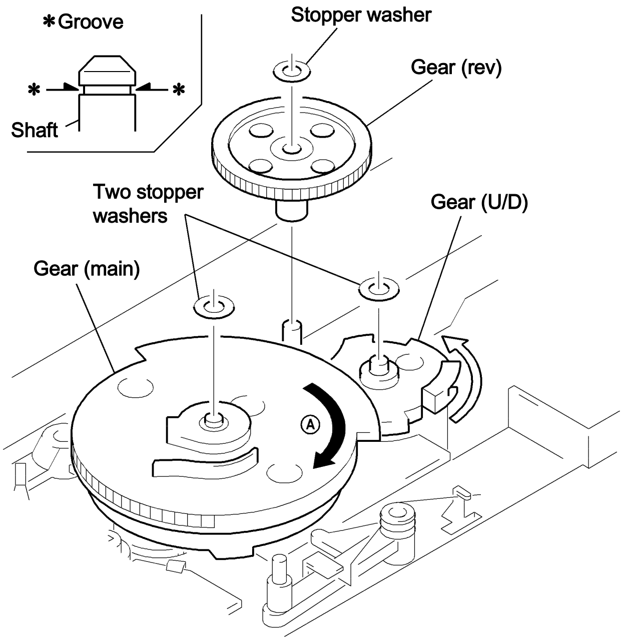
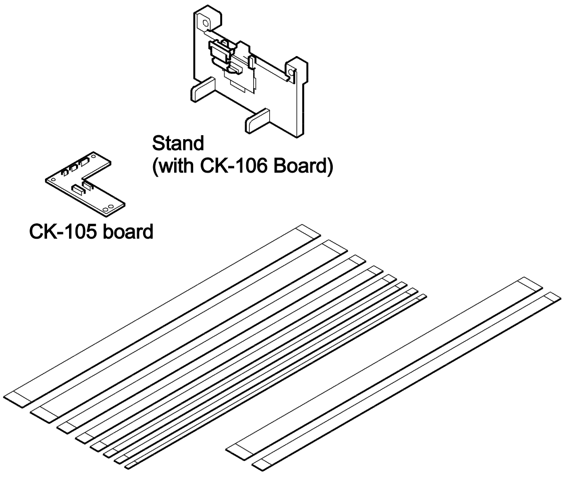

∗Groove
∗
∗
Shaft
Stopper washer
Gear (rev)
Two stopper
washers
Gear (U/D)
Gear (main)
Ⓐ

Fig. 6

5. HOW TO SERVICE MB-98 BOARD

- Jig (J-6090-107-A) Extension cable
- Jig (J-6090-108-A) Extension cable


Stand
(with CK-106 Board)
CK-105 board

Eight flexible flat cables

FFC 5P (EXCEPT DVP-NC600), FFC 9P,
FFC 15P, FFC26 P,
FFC 9P (DVP-NS500P/NS700P),
FFC 15P (DVP-NS400D),
FFC 25P
(EXCEPT DVP-NS300 J model/NC600),
FFC 29P (DVP-NS300 J model)

Two flexible flat cables

FFC 11P, FFC 25P

1) Remove the upper case and reinforcement (C) from the set. (Refer to 2-1)
2) Remove the rear panel. (Refer to 2-1)
3) Remove the MB-98 board. (Refer to 2-1)
4) Set the stand (with CK-106 board) as shown in Fig. 7.

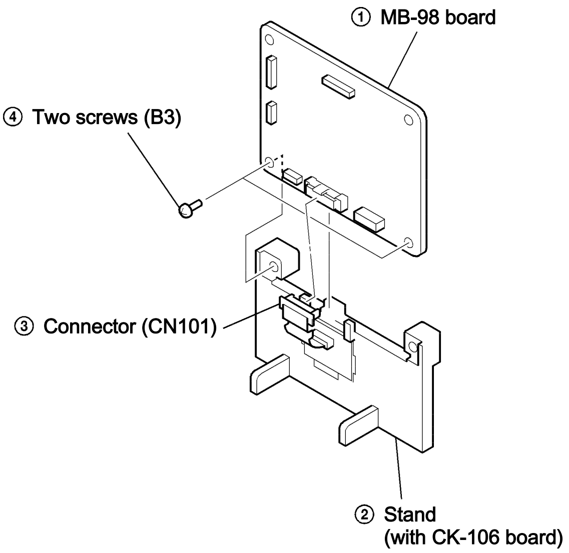

① MB-98 board
④ Two screws (B3)
③ Connector (CN101)
② Stand
(with CK-106 board)

Fig. 7

5) Set the CK-105 board as shown in Fig. 8.

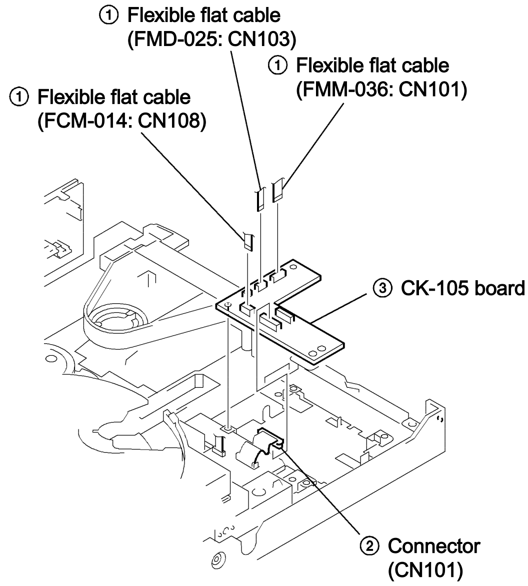

① Flexible flat cable (FMD-025: CN103)
① Flexible flat cable (FMM-036: CN101)
① Flexible flat cable (FCM-014: CN108)
③ CK-105 board
② Connector (CN101)

Fig. 8

6) Set the four flexible flat cables as shown in Fig. 9.

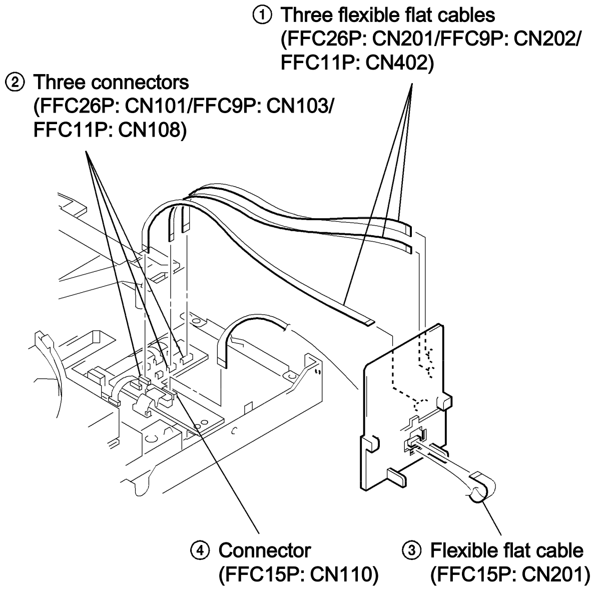

① Three flexible flat cables (FFC26P: CN201/FFC9P: CN202/ FFC11P: CN402)
② Three connectors (FFC26P: CN101/FFC9P: CN103/ FFC11P: CN108)
④ Connector (FFC15P: CN110)
③ Flexible flat cable (FFC15P: CN201)

Fig. 9

7) Set the rear panel as shown in Fig. 10.

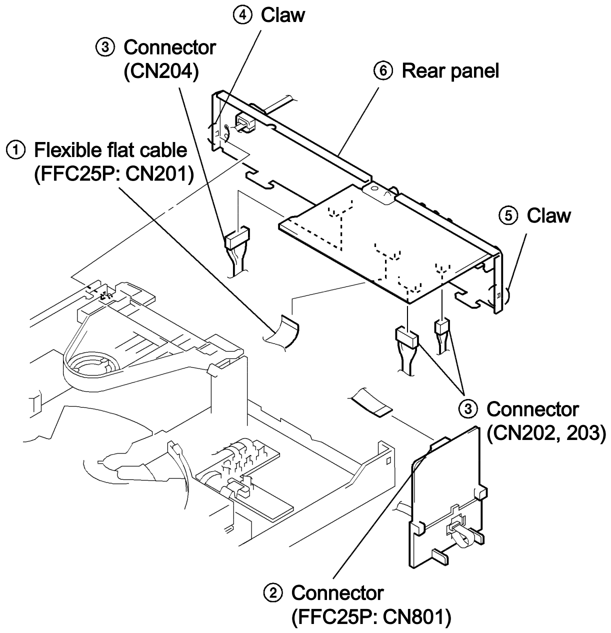
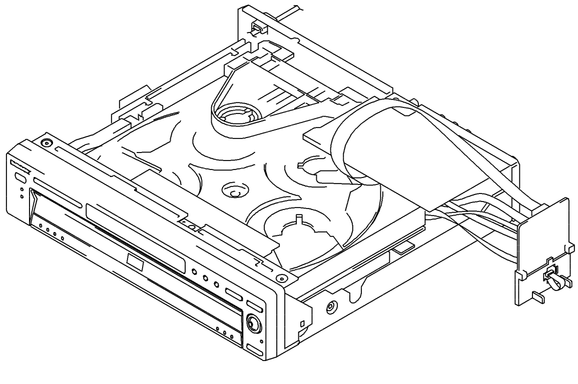
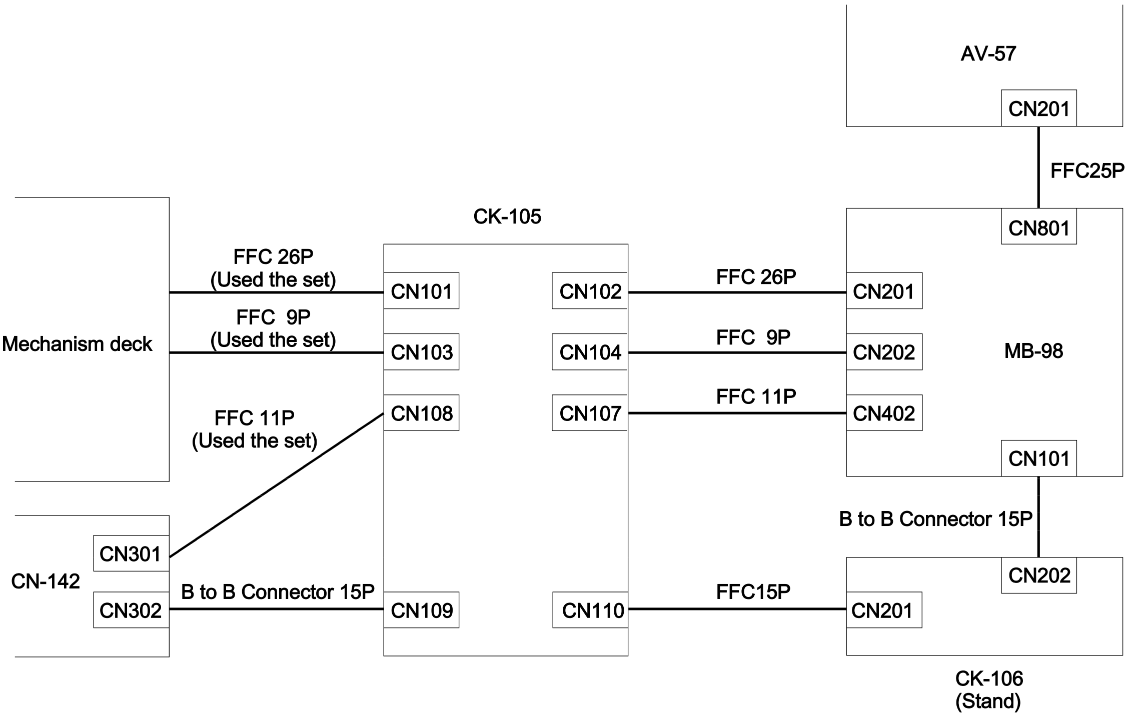

④ Claw
③ Connector (CN204)
⑥ Rear panel
① Flexible flat cable (FFC25P: CN201)
⑤ Claw
③ Connector (CN202, 203)
② Connector (FFC25P: CN801)

Fig. 10



6. CONNECTION OF SERVICE JIG


AV-57
CN201
FFC25P
CK-105
CN801
FFC 26P
(Used the set)
CN101
CN102
FFC 26P
CN201
FFC 9P
(Used the set)
Mechanism deck
CN103
CN104
FFC 9P
CN202
MB-98
CN108
CN107
FFC 11P
CN402
FFC 11P
(Used the set)
CN101
B to B Connector 15P
CN301
CN202
CN-142
B to B Connector 15P
CN302
CN109
CN110
FFC15P
CN201
CK-106
(Stand)

SECTION 1
GENERAL

This section is extracted from instruction manual (3-067-827-11).

About this Manual

- Instructions in this manual describe the controls on the remote. You can also use the controls on the player if they have the same or similar names as those on the remote.
- The icons used in this manual are described below:

Icon	Meaning	Icon	Meaning
DVD	Functions available in DVD video mode	CD	Functions available in music CD mode
VIDEO CD	Functions available in VIDEO CD mode	💡	More convenient features

This Player Can Play the Following Discs

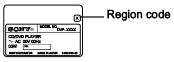
Format of discs	
DVD VIDEO	DVD VIDEO
VIDEO CD	COMPACT disc DIGITAL VIDEO
Music CD	COMPACT disc DIGITAL AUDIO

The "DVD VIDEO" logo is a trademark.

Region code

Your player has a region code printed on the back of the unit and will only play DVDs labeled with identical region codes.

DVDs labeled ALL will also play on this player.
If you try to play any other DVD, the message "Playback prohibited by area limitations." will appear on the TV screen. Depending on the DVD, no region code indication may be labeled even though playing the DVD is prohibited by area restrictions.


Region code

Example of discs that the player cannot play

The player cannot play the following discs:
- CD-ROMs (PHOTO CDs included)
- All CD-Rs other than music and VCD format CD-Rs
- Data part of CD-Extras
- DVD-ROMs
- DVD Audio discs
- HD layer on SACDs

Also, the player cannot play the following discs:
- A DVD with a different region code (page 72).
- A disc recorded in a color system other than NTSC, such as PAL or SECAM. (This player conforms to the NTSC color system.)
- A disc that has a non-standard shape (e.g., card, heart).
- A disc with paper or stickers on it.
- A disc that has the adhesive of cellophane tape or a sticker still left on it.

Note

Some CD-Rs or CD-RWs cannot be played on this player depending upon the recording quality or physical condition of the disc, or the characteristics of the recording device.
Furthermore, the disc will not play if it has not been correctly finalized. For more information, see the operating instructions for the recording device.

Note on playback operations of DVDs and VIDEO CDs.

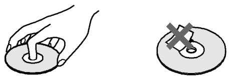
Some playback operations of DVDs and VIDEO CDs may be intentionally set by software producers. Since this player plays DVDs and VIDEO CDs according to the disc contents the software producers designed, some playback features may not be available. Also, refer to the instructions supplied with the DVDs or VIDEO CDs.

Copyrights

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents, other intellectual property rights owned by Macrovision Corporation, and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only, unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

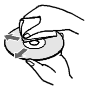
Notes about the Discs

On handling discs
- To keep the disc clean, handle the disc by its edge. Do not touch the surface.



- Do not expose the disc to direct sunlight or heat sources such as hot air ducts, or leave it in a car parked in direct sunlight as the temperature may rise considerably inside the car.
- After playing, store the disc in its case.

On cleaning
- Before playing, clean the disc with a cleaning cloth.
  Wipe the disc from the center out.

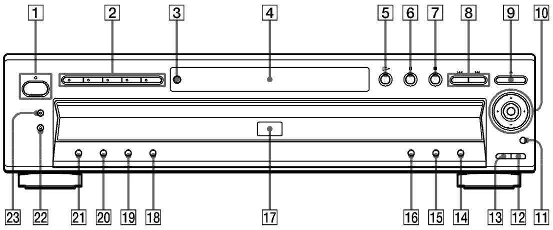


- Do not use solvents such as benzine, thinner, commercially available cleaners, or anti-static spray intended for vinyl LPs.

Index to Parts and Controls

For more information, refer to the pages indicated in parentheses.

Front panel


1
2
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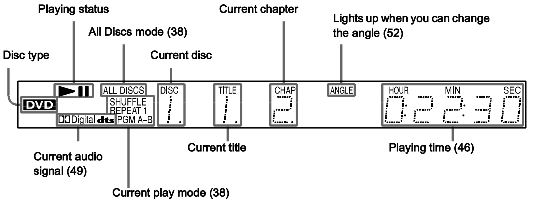
5
6
7
8
9
10
23
22
21
20
19
18
17
16
15
14
13
12
11

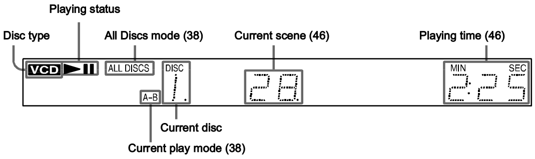
1 POWER switch/indicator (32)
2 DISC SELECT 1 - 5 buttons/indicators (34)
3 R (remote sensor) (15)
4 Front panel display (10)
5 ▷ (play) button (32)
6 ❚❚ (pause) button (34, 59)
7 ■ (stop) button (32)
8 ⏮/⏭ (previous/next) buttons (34)
9 ≜ (open/close) button (32)
10 ←/↑/↓/→/ENTER buttons (28)
11 DISPLAY button (13)
12 DISC SKIP button (32)
13 EXCHANGE button (34)
14 ↶ RETURN button (37)
15 DVD MENU button (37)
16 TITLE button (36)
17 Disc tray (32)
18 LOAD button (34)
19 ONE/ALL button (38)
20 REPEAT button (42)
21 SHUFFLE button (41)
22 BNR (Block Noise Reduction) button/indicator (53)
23 SURROUND button/indicator (50)

Front Panel Display

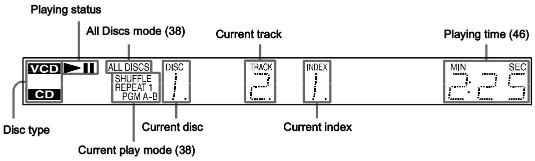
When playing back a DVD


Playing status
Current chapter
Lights up when you can change the angle (52)
All Discs mode (38)
Disc type
Current disc
DVD
ALL DISCS
SHUFFLE
REPEAT 1
PGM A-B
Digital dts
DISC
TITLE
CHAP
ANGLE
HOUR
MIN
SEC
Current audio signal (49)
Current title
Playing time (46)
Current play mode (38)

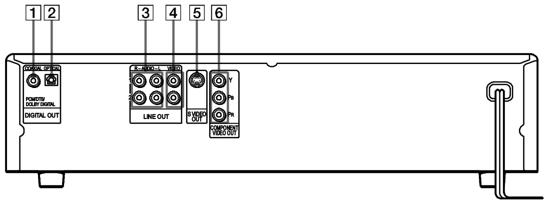
When playing back a VIDEO CD (PBC)


Playing status
Disc type
All Discs mode (38)
Current scene (46)
Playing time (46)
VCD
ALL DISCS
DISC
A-B
MIN
SEC
Current disc
Current play mode (38)

When playing back a CD or VIDEO CD (without PBC)

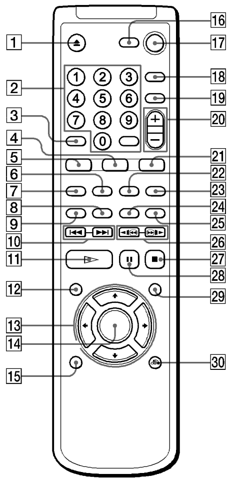

Playing status
All Discs mode (38)
Current track
Playing time (46)
VCD
CD
ALL DISCS
SHUFFLE
REPEAT 1
PGM A-B
DISC
TRACK
INDEX
MIN
SEC
Disc type
Current disc
Current index
Current play mode (38)

Rear Panel


1
2
3
4
5
6
COAXIAL OPTICAL
DIGITAL OUT
LINE OUT
S VIDEO OUT
COMPONENT VIDEO OUT

1 DIGITAL OUT (COAXIAL) jack (22, 24, 26)
2 DIGITAL OUT (OPTICAL) jack (22, 24, 26)
3 LINE OUT L/R (AUDIO) 1/2 jacks (16, 20, 21)
4 LINE OUT (VIDEO) 1/2 jacks (16, 21)
5 S VIDEO OUT jack (18, 21)
6 COMPONENT VIDEO OUT jacks (18)

Remote


1
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5
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11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30

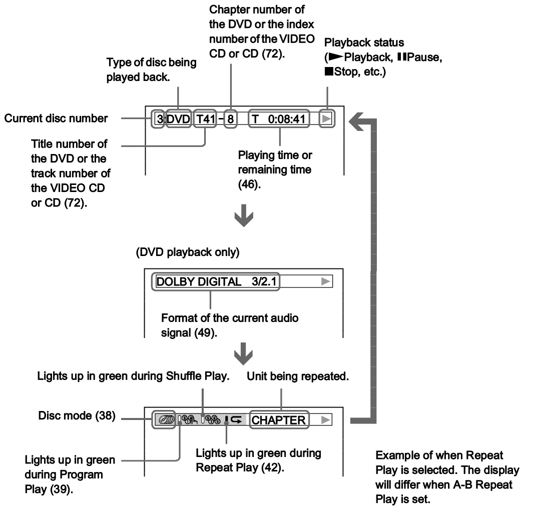
1 ⏏ OPEN/CLOSE button (32)
2 Number and ENTER buttons
3 CLEAR button (40)
4 ANGLE button (52)
5 AUDIO button (49)
6 PROGRAM button (39)
7 SHUFFLE button (41)
8 DISC SKIP button (32)
9 TIME/TEXT button (46)
10 ⏮ /⏭ PREV (previous) /NEXT buttons (34)
11 ▷ PLAY button (32)
12 TITLE button (36)
13 ←/↑/↓/→ buttons (28)
14 ENTER button (28)
15 DISPLAY button (62)
16 TV I/⏻ (on/standby) button (60)
17 I/⏻ (on/standby) button (32)
18 BNR (Block Noise Reduction) button (53)
19 TV/VIDEO button (60)
20 VOL (volume) +/– buttons (60)
21 SUBTITLE button (52)
22 REPEAT button (42)
23 ONE/ALL DISCS button (38)
24 A-B button (43)
25 INSTANT REPLAY button (34)
26 ◀❚⏪/⏩❚▶ SCAN/SLOW buttons (44)
27 ■ STOP button (34)
28 ❚❚ PAUSE button (34, 59)
29 DVD MENU button (37)
30 ↩ RETURN button (37)

Guide to On-Screen Displays (Status Bar, Control Bar, Control Menu)

The following explains the three types of on-screen displays used with this player:
Status Bar, Control Bar, and Control Menu.

Status Bar

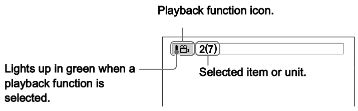
Displays the current playing status.
This display appears when the DISPLAY button is pressed repeatedly during playback.
The numbers in parentheses indicate reference pages.


Chapter number of the DVD or the index number of the VIDEO CD or CD (72).
Type of disc being played back.
Playback status (▶Playback, ❚❚Pause, ■Stop, etc.)
Current disc number
3 DVD T41 - 8 T 0:08:41 ▶
Title number of the DVD or the track number of the VIDEO CD or CD (72).
Playing time or remaining time (46).
(DVD playback only)
DOLBY DIGITAL 3/2.1
Format of the current audio signal (49).
Lights up in green during Shuffle Play.
Unit being repeated.
Disc mode (38)
CHAPTER
Lights up in green during Program Play (39).
Lights up in green during Repeat Play (42).

Example of when Repeat Play is selected. The display will differ when A-B Repeat Play is set.

Control Bar

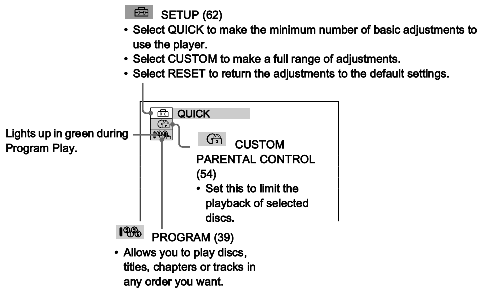
The Control Bar appears when a playback function is selected by pressing the function's button on the remote.


Playback function icon.
2(7)
Lights up in green when a playback function is selected.
Selected item or unit.

Example of when ANGLE is pressed on the remote.

Control Menu

The Control Menu appears when the DISPLAY button is pressed when the player is in stop mode.
The number in parenthesis indicate reference pages.


SETUP (62)
Lights up in green during Program Play.
QUICK
CUSTOM
PARENTAL CONTROL (54)
PROGRAM (39)

SETUP (62)
- Select QUICK to make the minimum number of basic adjustments to use the player.
- Select CUSTOM to make a full range of adjustments.
- Select RESET to return the adjustments to the default settings.

PARENTAL CONTROL (54)
- Set this to limit the playback of selected discs.

PROGRAM (39)
- Allows you to play discs, titles, chapters or tracks in any order you want.

Quick Overview

A quick overview presented in this chapter will give you enough information to start using the player for your enjoyment. To use the surround sound features of this player, refer to “Hookups” on page 18.

Note

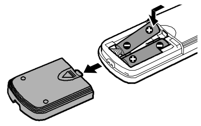
You cannot connect this player to a TV that does not have a video input jack.
Be sure to turn off the power of each component before connecting.

Step 1: Unpacking

Check that you have the following items:
- Audio/video cord (pinplug × 3 ←→ pinplug × 3) (1)
- Remote commander (remote) RMT-D130A (1)
- Size AA (R6) batteries (2)
- A plug adaptor is included with some models.

Step 2: Inserting Batteries into the Remote

You can control the player using the supplied remote. Insert two size AA (R6) batteries by matching the ⊕ and ⊖ ends on the batteries to the markings inside the compartment. When using the remote, point it at the remote sensor ⊡ on the player.

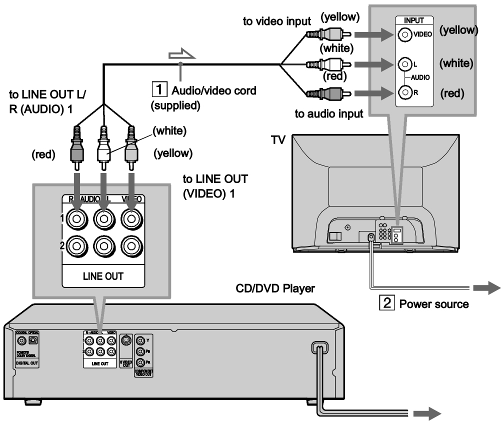


Notes

- Do not leave the remote in an extremely hot or humid place.
- Do not drop any foreign object into the remote casing, particularly when replacing the batteries.
- Do not expose the remote sensor to direct light from the sun or lighting apparatus. Doing so may cause a malfunction.
- If you do not use the remote for an extended period of time, remove the batteries to avoid possible damage from battery leakage and corrosion.

Step 3: TV Hookups

Connect the supplied audio/video cord and power cord in the order (1~3) shown below. Be sure to connect the power cord last.


to video input
(yellow)
(white)
(red)
INPUT
VIDEO
L
AUDIO
R
(yellow)
(white)
(red)
to audio input
1 Audio/video cord (supplied)
to LINE OUT L/ R (AUDIO) 1
(white)
(red)
(yellow)
to LINE OUT (VIDEO) 1
TV
R AUDIO L VIDEO
1
2
LINE OUT
CD/DVD Player
2 Power source
3 Power source

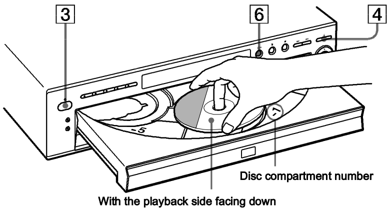
⇨: Signal flow

When connecting to a wide screen TV

Depending on the disc, the image may not fit your TV screen.
If you want to change the aspect ratio, please refer to page 64.

Step 4: Playing a Disc

1. **Turn on the TV.**
2. **Switch the input selector on the TV to the player.**


3
6
4
Disc compartment number
With the playback side facing down

3. **Press POWER on the player.**
4. **Press ⏏ on the player to open the disc tray.**
5. **Place the disc on the tray with the playback side facing down.**
6. **Press ▷.**
   The disc tray closes and the player begins playing the disc.

After Step 6

Depending on the disc, a menu may be displayed on the TV screen. If so, select the item you want from the menu and play the DVD (page 37) or VIDEO CD disc (page 37).

To stop playing

Press ■.

To take out the disc

Press ⏏.

To turn off the player

Press I/⏻ on the remote. The player is set to standby mode and the power indicator lights up in red. Press POWER on the player to turn off completely.

Hooking Up the Player

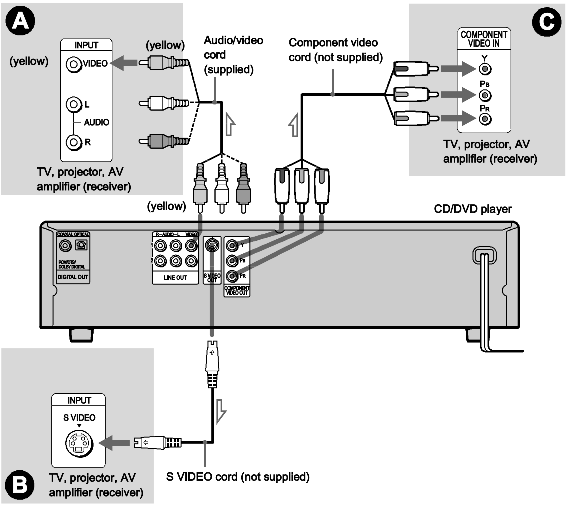
Follow Steps 1 to 4 to hook up and adjust the settings of the player.
Before you start, turn off the power, check that you have all of the supplied accessories, and insert the batteries into the remote (page 15).

Notes

- Plug cords securely to prevent unwanted noise.
- Refer to the instructions supplied with the components to be connected.

Step 1: Connecting the Video Cords

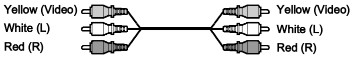
Connect this player to your TV monitor, projector, or AV amplifier (receiver) using a video cord. Select one of the patterns Ⓐ through Ⓒ, according to the input jack on your TV monitor, projector, or AV amplifier (receiver).


A
(yellow)
INPUT
VIDEO
L
AUDIO
R
(yellow)
TV, projector, AV amplifier (receiver)
Audio/video cord (supplied)
Component video cord (not supplied)
C
COMPONENT VIDEO IN
Y
PB
PR
TV, projector, AV amplifier (receiver)
(yellow)
CD/DVD player
B
INPUT
S VIDEO
TV, projector, AV amplifier (receiver)
S VIDEO cord (not supplied)

⇨ : Signal flow

A If you are connecting to a video input jack

Connect the yellow plugs of the audio/video cord (supplied) to the yellow (video) jacks. You will enjoy standard quality images.



Use the red and white plugs to connect to the audio input jacks (page 20).

B If you are connecting to an S VIDEO input jack

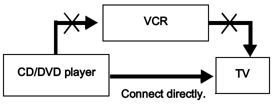
Connect the S VIDEO cord (not supplied). You will enjoy high quality images.

C If you are connecting to a monitor, projector or AV amplifier (receiver) having component video input jacks (Y, PB, PR)

Connect the component via the COMPONENT VIDEO OUT jacks using component video cords (not supplied) or three video cords (not supplied) of the same kind and length. You will enjoy accurate color reproduction and high quality images.

Note

Do not connect your player to a VCR. You may not receive a clear image on the TV screen if you pass the player signals via the VCR.



Step 2: Connecting the Audio Cords

Refer to the chart below to select the connection that best suits your system. The surround effects you will enjoy depend on the connections and components you use.

Select a connection

Select one of the following connections, A through D.

Connection	Components to be connected
A (page 21)	• TV (stereo)
B (page 22)	• Stereo amplifier (receiver) (having L and R audio input jacks only, or having a digital input jack) • 2 speakers (front L and R)
B (page 22)	• MD deck/DAT deck
C (page 24)	• AV amplifier (receiver) with a Dolby* Surround (Pro Logic) decoder (having L and R audio input jacks only, or having a digital input jack) • 3 speakers (front L and R, and rear (monaural)) • 6 speakers (front L and R, center, rear L and R, subwoofer)
D (page 26)	• AV amplifier (receiver) having a Dolby Digital or DTS** decoder, and a digital input jack • 6 speakers (front L and R, center, rear L and R, subwoofer)

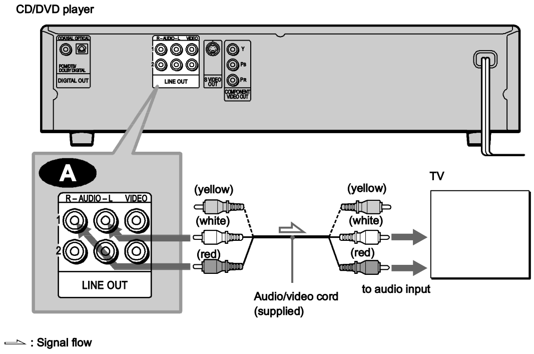
* Manufactured under license from Dolby Laboratories. "Dolby," "Pro Logic," and the double-D symbol are trademarks of Dolby Laboratories. Confidential unpublished works. © 1992-1997 Dolby Laboratories. All rights reserved.

**"DTS" is a registered trademark of Digital Theater Systems, Inc.

A Connecting to your TV

This connection will use your TV speakers for sound.

■Recommended surround sound effects for this connection.
- TVS DYNAMIC (page 50)
- TVS WIDE (page 50)



The yellow plug is used for video signals (page 18).

B Connecting to a stereo amplifier (receiver) and 2 speakers/Connecting to an MD deck or DAT deck

This connection will use your 2 front speakers connected to your stereo amplifier (receiver) for sound. If the stereo amplifier (receiver) has audio input jacks L and R only, use B-1. If the amplifier (receiver) has a digital input jack, use B-2. When connecting to an MD deck or a DAT deck, use B-2. In this case, connect the player directly to the MD deck or DAT deck without using your stereo amplifier (receiver).

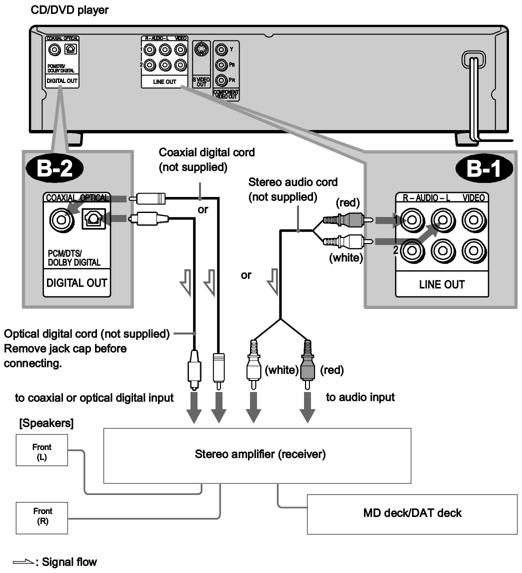
■Recommended surround sound effects for the B-1 connection only.
- TVS STANDARD (page 50)

In connection B-1, you can use the supplied audio/video cord instead of using a separate audio cord.

To realize better surround sound effects, make sure that your listening position is in between your speakers.

Note

If you select one of the TVS effects while playing a disc, no sound will come from your speakers with the B-2 connection.

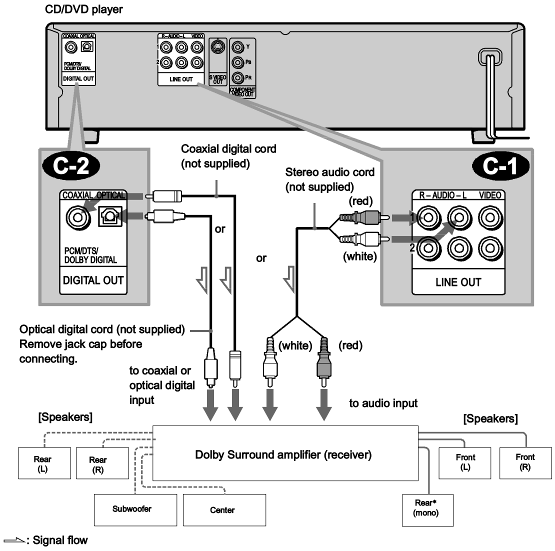

CD/DVD player
B-2
B-1
COAXIAL OPTICAL
PCM/DTS/
DOLBY DIGITAL
DIGITAL OUT
R – AUDIO – L VIDEO
LINE OUT
Coaxial digital cord
(not supplied)
Stereo audio cord
(not supplied)
(red)
(white)
or
or
Optical digital cord (not supplied)
Remove jack cap before
connecting.
(white)
(red)
to coaxial or optical digital input
to audio input
[Speakers]
Front
(L)
Front
(R)
Stereo amplifier (receiver)
MD deck/DAT deck
: Signal flow

C Connecting to a Dolby Surround (Pro Logic) decoder amplifier (receiver) and 3 to 6 speakers

This connection will allow you to enjoy the surround effects of the Pro Logic decoder on your amplifier (receiver). If you have an AV amplifier (receiver) equipped with a Dolby Digital or DTS decoder, refer to page 26.
You can enjoy the Dolby Surround effects only when playing Dolby Surround audio or multichannel audio (Dolby Digital) discs.
Pro Logic uses a minimum of 3 speakers (front L and R, and rear (monaural)). The surround effects are enhanced if 6 speakers (front L and R, center, rear L and R, and subwoofer) are used.
If your amplifier (receiver) has R and L audio input jacks only, use C-1. If your amplifier (receiver) has a digital input jack, use C-2.

■Recommended surround sound effects using this connection with your amplifier (receiver).
- Dolby Surround (Pro Logic) (page 66)

💡 For correct speaker setting location, please refer to the operating instructions of the amplifier (receiver).


CD/DVD player
C-2
C-1
COAXIAL OPTICAL
PCM/DTS/
DOLBY DIGITAL
DIGITAL OUT
R – AUDIO – L VIDEO
LINE OUT
Coaxial digital cord
(not supplied)
Stereo audio cord
(not supplied)
(red)
(white)
or
or
Optical digital cord (not supplied)
Remove jack cap before
connecting.
to coaxial or
optical digital
input
(white)
(red)
to audio input
[Speakers]
[Speakers]
Rear
(L)
Rear
(R)
Dolby Surround amplifier (receiver)
Front
(L)
Front
(R)
Subwoofer
Center
Rear*
(mono)
: Signal flow

* When connecting 6 speakers, replace the monaural rear speaker with a center speaker, 2 rear speakers and a subwoofer.

D Connecting to an AV amplifier (receiver) with a digital input jack having a Dolby Digital or DTS decoder, and 6 speakers

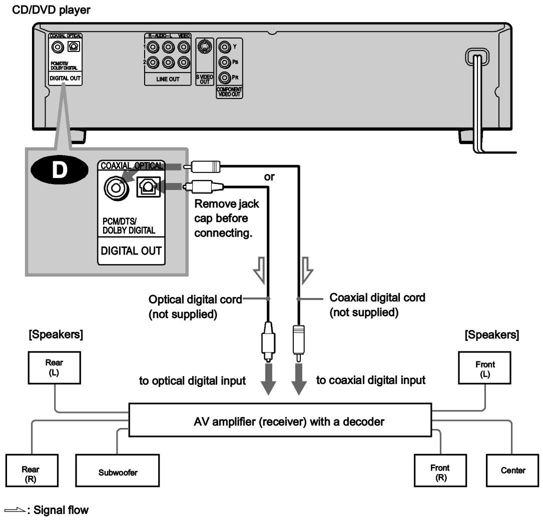
This connection will allow you to use the Dolby Digital or DTS decoder function of your AV amplifier (receiver). You are not able to enjoy the TVS sound effects of the player.

■Recommended surround sound effects using this connection with your amplifier (receiver).
- Dolby Digital (5.1ch) (page 66)
- DTS (5.1ch) (page 66)

💡 To enhance the surround sound effects, refer to the operating instructions of the amplifier (receiver) for correct speaker setting location.

Note

After you have completed the connection, be sure to set “DOLBY DIGITAL” to “DOLBY DIGITAL” (page 30). If your AV amplifier (receiver) has a DTS decoder, set “DTS” to “ON” (page 30). Otherwise, no sound or a loud noise will come from the speakers.


CD/DVD player
COAXIAL OPTICAL
PCM/DTS/
DOLBY DIGITAL
DIGITAL OUT
R–AUDIO–L
VIDEO
1
2
LINE OUT
S VIDEO
OUT
Y
PB
PR
COMPONENT
VIDEO OUT
D
or
Remove jack cap before connecting.
Optical digital cord
(not supplied)
Coaxial digital cord
(not supplied)
[Speakers]
[Speakers]
Rear
(L)
Front
(L)
to optical digital input
to coaxial digital input
AV amplifier (receiver) with a decoder
Rear
(R)
Subwoofer
Front
(R)
Center
: Signal flow

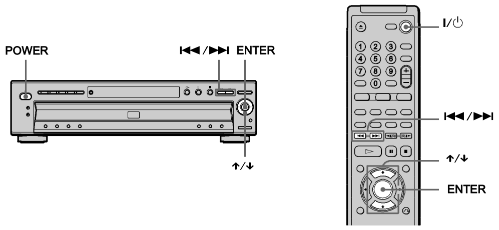
Step 3: Connecting the Power Cord

Plug the player and TV power cords into an AC outlet.

Do not connect the power cord of your player to the "switched" power socket of an amplifier (receiver). Otherwise, when you turn off the power of your amplifier (receiver), the settings for the player may be lost.

Step 4: Quick Setup

Follow the steps below to make the minimum number of basic adjustments to use the player. To skip an adjustment press ▶▶I, to return to the previous adjustment, press I◀◀.


POWER
I◀◀/▶▶I ENTER
↑/↓
I/⏻
I◀◀/▶▶I
↑/↓
ENTER

1 Turn on the TV.

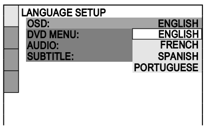
2 Switch the input selector on the TV to the player.

3 Press POWER on the player and press I/⏻ on the remote.

"Press [ENTER] to run QUICK SETUP." appears at the bottom of the screen. If this message does not appear, select "QUICK" under SETUP in the Control Menu (page 14) to run Quick Setup.

4 Press ENTER without inserting a disc.

The Setup Display for selecting the language used in the on-screen display appears.



LANGUAGE SETUP
OSD: ENGLISH
DVD MENU: ENGLISH
AUDIO:
SUBTITLE:

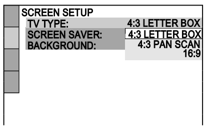
ENGLISH
FRENCH
SPANISH
PORTUGUESE

5 Press ↑/↓ to select a language.

The player uses the language selected here to display the DVD menu and subtitles as well.

6 Press ENTER.

The Setup Display for selecting the aspect ratio of the TV to be connected appears.



SCREEN SETUP
TV TYPE: 4:3 LETTER BOX
SCREEN SAVER:
BACKGROUND:

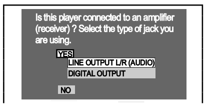
4:3 LETTER BOX
4:3 PAN SCAN
16:9

7 Press ↑/↓ to select the item.

TV Type	You select	Page
4:3 standard TV	4:3 LETTER BOX or 4:3 PAN SCAN	64
A wide-screen TV or 4:3 standard TV with the wide-screen mode	16:9	64

8 Press ENTER.

The Setup Display for selecting the type of jack used to connect your amplifier (receiver) appears.



Is this player connected to an amplifier (receiver) ? Select the type of jack you are using.

YES
LINE OUTPUT L/R (AUDIO)
DIGITAL OUTPUT
NO

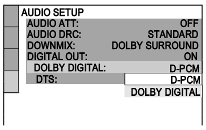
continued ➡

9 Press ↑/↓ to select the item, then press ENTER.

- When "NO" or "LINE OUTPUT L/R (AUDIO)" is selected, Quick Setup is finished and connections are complete.
- When "DIGITAL OUTPUT" is selected, the Setup Display for "DOLBY DIGITAL" appears. Proceed to Step 10.

10 Press ↑/↓ to select the item.

Choose the item that matches the audio connection you selected in pages 22 to 26 (B through D).



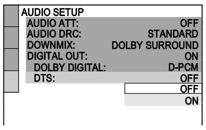
AUDIO SETUP
AUDIO ATT: OFF
AUDIO DRC: STANDARD
DOWNMIX: DOLBY SURROUND
DIGITAL OUT: ON
DOLBY DIGITAL: D-PCM
DTS:

D-PCM
DOLBY DIGITAL

Audio Cord Connection Type	You select	Page
B-2 C-2	D-PCM	68
D	DOLBY DIGITAL (only if the amplifier/receiver has a Dolby Digital decoder)	68

11 Press ENTER.

DTS is selected.



AUDIO SETUP
AUDIO ATT: OFF
AUDIO DRC: STANDARD
DOWNMIX: DOLBY SURROUND
DIGITAL OUT: ON
DOLBY DIGITAL: D-PCM
DTS: OFF

12 Press ↑/↓ to select the item.

Choose the item that matches the audio connection you selected in pages 22 to 26 (B through D).

Audio Cord Connection Type	You select	Page
B-2 C-2	OFF	68
D	ON (only if the amplifier/receiver has a DTS decoder)	68

13 Press ENTER.
Quick Setup is finished. All connections and setup operations are complete.

Note

You can directly start Quick Setup only when you run it for the first time.
To run Quick Setup a second time, select "QUICK" under SETUP in the Control Menu (page 62).

Enjoying the surround sound effects

To enjoy the surround sound effects of this player or your amplifier (receiver), the following items must be set as described below for the audio connection you selected in pages 22 to 26 (B through D). Each of these are the default settings and do not need to be adjusted when you first connect the player. Refer to page 62 for using the Setup Display.

Audio Connection (pages 21 to 26)

A

No additional settings are needed.

B-1 C-1

Item	You select	Page
DOWNMIX	DOLBY SURROUND	67

- If the sound distorts even when the volume is turned down, set "AUDIO ATT" to "ON" (page 66).

B-2 C-2 D

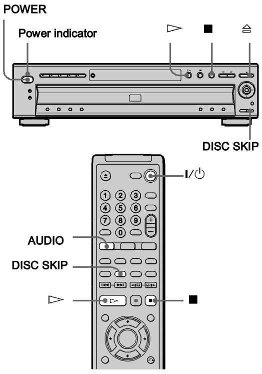
Item	You select	Page
DOWNMIX	DOLBY SURROUND	67
DIGITAL OUT	ON	67

Playing Discs

DVD VIDEO CD CD

Depending on the DVD or VIDEO CD, some operations may be different or restricted.

Refer to the operating instructions supplied with your disc.



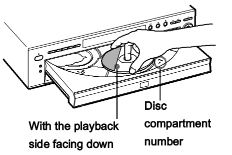
1 Turn on your TV.

2 Switch the input selector on the TV to the player.

When using an amplifier (receiver)
Turn on the amplifier (receiver) and select the appropriate channel.

3 Press POWER on the player.
The player enters standby mode and the power indicator lights up in red.

4 Press ≙ on the player, and place a disc on the disc tray.
The player automatically turns on and the power indicator lights up in green.
To place other discs on the tray, press DISC SKIP and place the discs in the order you want to play them.
Each time you press DISC SKIP, the disc tray turns so you can place the discs on the empty compartments. The player plays from the last disc placed on the tray.


With the playback side facing down
Disc compartment number

5 Press ▷.
The disc tray closes, and the player starts playback (continuous play). Adjust the volume on the TV or the amplifier (receiver).

After following Step 5

Depending on the disc, a menu may appear on the TV screen. You can play the disc interactively by following the instructions on the menu. DVD (page 36), VIDEO CD (page 37).

To turn on the player

Press POWER on the player. The player enters standby mode and the power indicator lights up in red. Press I/⏻ on the remote. The player turns on and the power indicator lights up in green. In standby mode, the player also turns on by pressing ≙ on the player or by pressing ▷.

To turn off the player

Press I/⏻ on the remote. The player enters standby mode and the power indicator lights up in red. To turn off the player completely, press POWER on the player. While playing a disc, do not turn off the player by pressing POWER. Doing so may cancel the menu settings. When you turn off the player, first press ■ to stop playback and then press I/⏻ on the remote.

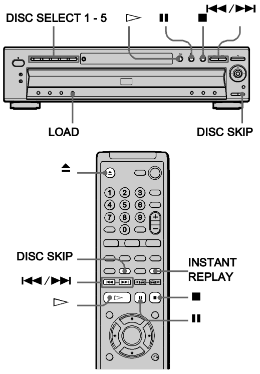
Notes on playing DTS sound tracks on a CD

- When playing DTS-encoded CDs, excessive noise will be heard from the analog stereo jacks. To avoid possible damage to the audio system, the consumer should take proper precautions when the analog stereo jacks of the player are connected to an amplification system. To enjoy DTS Digital Surround™ playback, an external 5.1-channel decoder system must be connected to the digital jacks of the player.
- Set the sound to "STEREO" using the AUDIO button when you play DTS sound tracks on a CD (page 49).
- Do not play DTS sound tracks without first connecting the player to an audio component having a built-in DTS decoder. The player outputs the DTS signal via the DIGITAL OUT (COAXIAL or OPTICAL) jack even if "DTS" in "AUDIO SETUP" is set to "OFF" in the Setup Display (page 68), and may affect your ears or cause your speakers to be damaged.

Notes on playing DVDs with a DTS sound track

- DTS audio signals are output only through the DIGITAL OUT (COAXIAL or OPTICAL) jack.
- If you connect the player to audio equipment without a DTS decoder, do not set "DTS" to "ON" in "AUDIO SETUP" (page 68). A loud noise may come out from the speakers, affecting your ears or causing the speakers to be damaged.
- When you play a DVD with DTS sound tracks, set "DTS" to "ON" in "AUDIO SETUP" (page 68).

Additional operations



To	Operation
Select a disc	Press DISC SELECT 1 - 5 on the player
Stop	Press ■
Pause	Press ❚❚
Resume play after pause	Press ❚❚ or ▷
Go to the next disc	Press DISC SKIP
Go to the next chapter, track, or scene in continuous play mode	Press ⏭
Go back to the preceding chapter, track, or scene in continuous play mode	Press ⏮
Stop play and remove the disc	Press ⏏
Replay a previous scene (DVD only)	Press INSTANT REPLAY
Check if a disc is in the disc compartment	Press LOAD on the player. The DISC SELECT indicator for each compartment (1 - 5) containing a disc lights up.

💡 The Instant Replay function is useful when you want to review a scene or dialog that you missed.

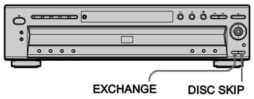
💡 Before loading the discs, a DISC SELECT indicator of an empty compartment may be lit.

Notes

- You may not be able to use the Instant Replay function with some scenes.
- If you turn the power off by pressing POWER on the player, the loading information will be reset.

Replacing discs while playing a disc (EXCHANGE)

You can open the disc tray while playing a disc so that you can check which discs are to be played next and replace discs without interrupting playback of the current disc.



1 Press EXCHANGE.
The disc tray opens and two disc compartments appear. Even if the player is playing a disc, it doesn't stop playing.

2 Replace the discs in the compartments with new ones.

3 Press DISC SKIP.
The disc tray turns and another two disc compartments appear.

4 Replace the discs in the compartments with new ones.

5 Press EXCHANGE.
The disc tray closes.

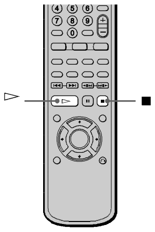
While the disc tray is open,
- If the playback of the current disc ends, the player stops playing. If the disc is played in ONE DISC Repeat Play mode, the current disc starts playing again.
- In ALL DISCS Shuffle Play mode (page 41), titles/tracks/chapters are reshuffled only on the current disc.
- In Program Play mode (page 39), the titles/tracks/chapters only on the current disc are played.

Note

Do not push the disc tray to close in Step 5, as you may damage the player.

Resuming Playback from the Point Where You Stopped the Disc (Resume Play) DVD VIDEO CD CD

When you stop the disc, the player remembers the point where you pressed ■ and "RESUME" appears on the front panel display. As long as you do not open the disc tray, Resume Play works even if the player enters standby mode by pressing I/⏻ on the remote.



1 While playing a disc, press ■ to stop playback.
"RESUME" appears on the front panel display and you can restart the disc from the point where you stopped the disc.
If "RESUME" does not appear, Resume Play is not available.

2 Press ▷.
The player starts playback from the point where you stopped the disc in Step 1.

To play from the beginning of the disc, press ■ twice, then press ▷.

Notes

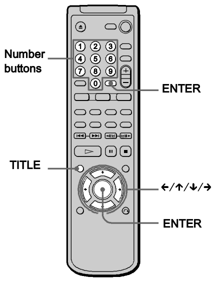
- Depending on where you stopped the disc, the player may not resume playback from exactly the same point.
- The point where you stopped playing is cleared when:
  - you turn the power off by pressing POWER on the player.
  - you change the play mode.
  - you change the settings on the Setup Display.
  - you load disc information by pressing LOAD on the player.

Using the DVD's Menu
DVD

Some discs have a "title menu" or a "DVD menu." On some DVDs, this may simply be called a "menu" or "title."

Using the title menu

A DVD is divided into long sections of a picture or a music feature called "titles." When you play a DVD which contains several titles, you can select the title you want using the title menu.



1 Press TITLE.
The title menu appears on the TV screen. The contents of the menu vary from disc to disc.

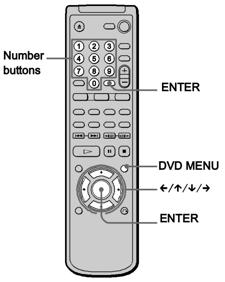
2 Press ←/↑/↓/→ or the number buttons to select the title you want to play.

3 Press ENTER.
The player starts playing the selected title.

You can also display the title menu by pressing TITLE on the player.

Using the DVD menu

Some DVDs allow you to select the disc contents using a menu. When you play these DVDs, you can select items such as the language for the subtitles and the language for the sound using the DVD menu.



1 Press DVD MENU.
The DVD menu appears on the TV screen. The contents of the menu vary from disc to disc.

2 Press ←/↑/↓/→ or the number buttons to select the item you want to change.

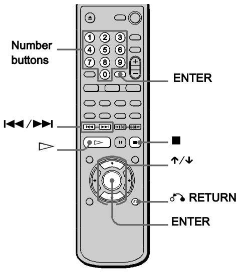
3 To change other items, repeat Step 2.

4 Press ENTER.

You can also display the DVD menu by pressing DVD MENU on the player.

Playing VIDEO CDs with PBC Functions (PBC Playback)
VIDEO CD

With PBC (Playback Control) functions, you can enjoy simple interactive operations, search functions, and other operations.
PBC playback allows you to play VIDEO CDs interactively by following the menu on the TV screen.



1 Start playing a VIDEO CD with PBC functions.
The menu for your selection appears.

2 Select the item number you want by pressing ↑/↓ or the number buttons.

3 Press ENTER.

4 Follow the instructions in the menu for interactive operations.
Refer to the instructions supplied with the disc, as the operating procedure may differ according to the VIDEO CD.

To go back to the menu
Press ↶ RETURN.

To play without using PBC, press ⏮/⏭ or the number buttons while the player is stopped to select a track, then press ▷ or ENTER.
"Play without PBC." appears on the TV screen and the player starts continuous play. You cannot play still pictures such as a menu.
To return to PBC playback, press ■ twice then press ▷.

Note

Depending on the VIDEO CD, "Press ENTER" in Step 3 may appear as "Press SELECT" in the instructions supplied with the disc. In this case, press ▷.

Various Play Mode Functions (Program Play, Shuffle Play, Repeat Play, A-B Repeat Play)
DVD VIDEO CD CD

You can set the following play modes:
- Program Play (page 38)
- Shuffle Play (page 41)
- Repeat Play (page 42)
- A-B Repeat Play (page 43)

Notes

- The play mode is canceled when:
  - you open the disc tray.
  - the player enters standby mode by pressing I/⏻ on the remote.
  - you turn the power off by pressing POWER on the player.
- If you are playing a VIDEO CD with PBC, you must first cancel PBC playback before you can set a play mode (except when you want to set A-B Repeat Play for moving pictures).

Selecting the disc mode (One Disc or All Discs)

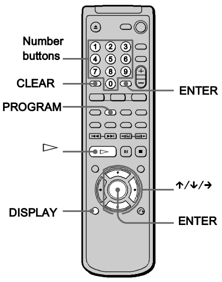
You can play one disc or all of the discs in the player. Before setting Program Play, Shuffle Play, or Repeat Play, you must select whether to set those play mode on one disc or all of the discs.

ONE/ALL DISCS

Press ONE/ALL DISCS on the remote, or ONE/ALL on the player to select (ONE DISC mode) or (ALL DISCS mode).

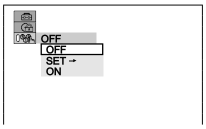
Creating your own program (Program Play)

You can play the contents of the discs in the order you want by arranging the order of the discs, titles, chapters, or tracks to create your own program. You can program up to 99 titles, chapters, and tracks. By selecting ALL DISCS mode, you can create a program for all of the discs in the player.

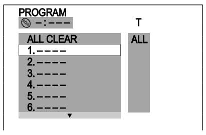


1 Press DISPLAY while the player is in stop mode.
The Control Menu is displayed.

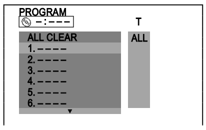
2 Press ↑/↓ to select (PROGRAM) and press ENTER.



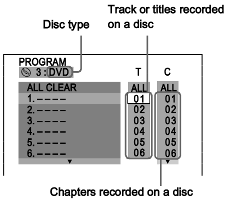
3 Press ↑/↓ to select "SET→" and press ENTER.
The display for programming appears.



4 Press →.
It is ready to set the first disc for the program.



5 Select the disc you want to program using the number buttons or ↑/↓, then press ENTER.
The cursor moves to the title or track (in this case, "01").

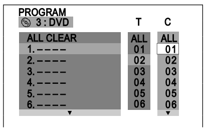


"?" appears when the player has not played a disc.

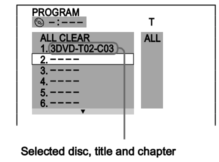
continued ➡

6 Select the title, chapter, or track you want to program.

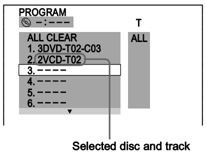
■When playing a DVD
For example, select chapter "03" of title "02."
Press ↑/↓ or the number buttons to select "02" under "T," then press ENTER.



Next, press ↑/↓ or the number buttons to select "03" under "C," then press ENTER.



■When playing a VIDEO CD or CD
For example, select track "02."
Press ↑/↓ or the number buttons to select "02" under "T," then press ENTER.



7 To program other discs, titles, chapters, or tracks, repeat Steps 4 to 6.
The programmed discs, titles, chapters, and tracks are displayed in the selected order.

8 Press ▷ to start Program Play.
Program Play begins.
When the program ends, you can restart the same program again by pressing ▷.

To return to normal play

Press CLEAR, or select "OFF" in Step 3.
To play the same program again, select "ON" in Step 3 and press ▷.

To turn off the Control Menu

Press DISPLAY repeatedly until the Control Menu is turned off.

To change the program

1 In Step 4, select the program number of the disc, title, chapter, or track you want to change using ↑/↓ or the number buttons, and press →.

2 Follow Step 5 for new programming.

To cancel the programmed order

To cancel all the titles, chapters, or tracks in the programmed order, press ↑, and select "ALL CLEAR" in Step 6. To cancel the selected program, select the program using ↑/↓ in Step 6, then press CLEAR.

💡 You can do Repeat Play or Shuffle Play of the programmed discs, titles, chapters, or tracks by pressing REPEAT or SHUFFLE during Program Play.

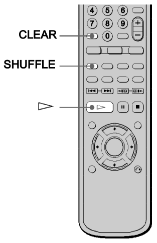
💡 You can select "PROGRAM" directly by pressing PROGRAM.

Note

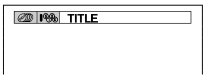
The number of titles, chapters, or tracks displayed are the same number of titles, chapters, or tracks recorded on a disc.

Playing in random order (Shuffle Play)

You can have the player "shuffle" discs, titles, chapters, or tracks and play them in a random order. Subsequent "shuffling" may produce a different playing order. By selecting ALL DISCS mode (page 38), you can shuffle all of the discs in the player.



1 Press SHUFFLE during playback.
The Control Bar is displayed.



2 Press SHUFFLE repeatedly to select the item you want to set.

■When playing a DVD (Program Play is set to OFF)
- DISC*: Shuffles discs and plays them in random order.
- TITLE: Shuffles titles and plays them in random order.
- CHAPTER: Shuffles chapters and plays them in random order.

■When playing a VIDEO CD or CD (Program Play is set to OFF)
- DISC*: Shuffles discs and plays them in random order.
- TRACK: Shuffles tracks and plays them in random order.

*Appears only when you select ALL DISCS mode.

■When playing a VIDEO CD, CD, or DVD (Program Play is set to ON)
- ON: Shuffles titles or tracks selected in Program Play and plays them in random order.

To return to normal play

Press CLEAR or select "OFF" in Step 2.

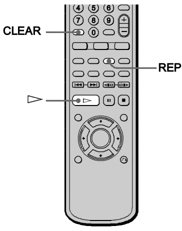
💡 You can set the player to "shuffle" in stop mode as well. After pressing SHUFFLE to select the item you want to set, press ▷. Shuffle Play starts.

Note

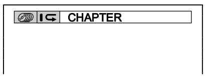
Up to 96 chapters in a disc can be played in random order when "CHAPTER" is selected.

Playing repeatedly (Repeat Play)

You can play all discs, or all of the titles or tracks on a disc or a single title, chapter, or track repeatedly.
You can use a combination of Shuffle or Program Play modes. By selecting ALL DISCS mode (page 38), you can repeat all of the discs in the player.



1 Press REPEAT during playback.
The Control Bar appears.



2 Press REPEAT repeatedly to select the item you want to set.

■When playing a DVD (Program Play and Shuffle Play are set to OFF)
- DISC: Repeats all of the titles on the disc when you select ONE DISC mode, or all of the titles on all of the discs when you select ALL DISCS.
- TITLE: Repeats the current title on a disc.
- CHAPTER: Repeats the current chapter.

■When playing a VIDEO CD or CD (Program Play and Shuffle Play are set to OFF)
- DISC: Repeats all of the tracks on a disc when you select ONE DISC mode, or all of the tracks on all of the discs when you select ALL DISCS mode.
- TRACK: Repeats the current track.

■When Program Play or Shuffle Play is on
- ON: Repeats Program Play or Shuffle Play.

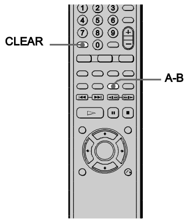
To return to normal play

Press CLEAR or select "OFF" in Step 2.

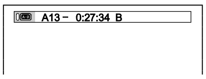
💡 You can set the player to "repeat" in stop mode as well. After pressing REPEAT to select the item you want to set, press ▷. Repeat Play starts.

Repeating a specific portion (A-B Repeat Play)

You can play a specific portion of a title, chapter, or track repeatedly. (This function is useful when you want to memorize lyrics, etc.)



1 During playback, when you find the starting point (point A) of the portion to be played repeatedly, press A-B.
The Control Bar appears.
The starting point (point A) is set.



2 When you reach the ending point (point B), press A-B again.
The set points are displayed and the player starts repeating this specific portion.
"A-B" appears on the front panel display during A-B Repeat Play.

To return to normal play

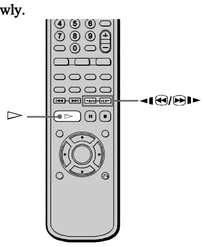
Press CLEAR.

Notes

- You can set A-B Repeat Play for only one specific section.
- When you set A-B Repeat Play, the settings for Shuffle Play, Repeat Play, and Program Play are canceled.
- You cannot set the start point (point A) on one disc and ending point (point B) on other disc.

Searching for a Particular Point on a Disc (Scan, Slow-motion Play) DVD VIDEO CD CD

You can locate a particular point on a disc quickly by monitoring the picture or playing back slowly.



Note

Depending on the DVD/VIDEO CD, you may not be able to do some of the operations described.

Locating a point quickly by playing a disc in fast forward or fast reverse (Scan)

Press ◄▮⏪ or ⏩▮► while playing a disc. When you find the point you want, press ▷ to return to normal speed.
Each time you press ◄▮⏪ or ⏩▮► during scan, the playback speed changes. Three speeds are available. With each press the indication changes as follows:

Playback direction
x2► (DVD/CD only) → 1►► → 2►►

Opposite direction
x2◄ (DVD only) → 1◄◄ → 2◄◄

The x2►/x2◄ playback speed is about twice the normal speed. The 2►►/2◄◄ playback speed is faster than 1►►/1◄◄.

Watching frame by frame (Slow-motion Play) DVD VIDEO CD

You can use this function only for DVDs or VIDEO CDs. Press ◄▮⏪ or ⏩▮► when the player is in pause mode. To return to the normal speed, press ▷.
Each time you press ◄▮⏪ or ⏩▮► during Slow-motion Play, the playback speed changes. Two speeds are available. With each press the indication changes as follows:

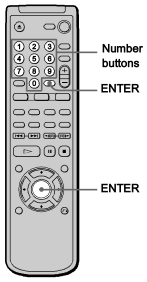
Playback direction
2▮► ←→ 1▮►

Opposite direction (DVD only)
2◄▮ ←→ 1◄▮

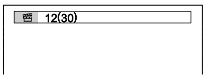
The 2▮►/2◄▮ playback speed is slower than 1▮►/1◄▮.

Selecting a Chapter or Track DVD VIDEO CD CD

You can select a chapter or track directly by inputting the chapter or track number.


Number buttons
ENTER
ENTER

1 Input the chapter or track number using the number buttons during playback.
For example, to select chapter 12, press 1, then 2.



■When playing a DVD
(CHAPTER)

■When playing a VIDEO CD (without PBC functions)
(TRACK)

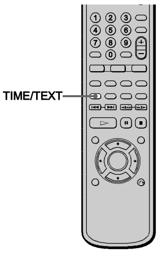
■When playing a CD
(TRACK)

If you make a mistake
Cancel the number by pressing CLEAR, then press a correct number.

2 Press ENTER.
The player starts playback from the selected chapter or track.

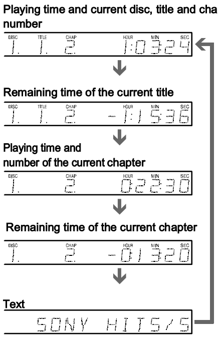
Checking the Playing Time and Remaining Time on the Front Panel Display DVD VIDEO CD CD

You can check information about the disc, such as the remaining time, total number of titles of a DVD, or tracks of a CD or VIDEO CD, using the front panel display (page 10).

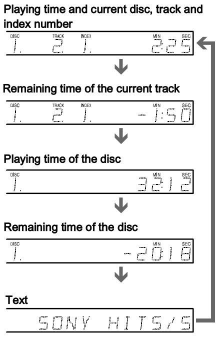


Press TIME/TEXT.
Each time you press TIME/TEXT while playing the disc, the display changes as shown in the following chart.

When playing a DVD


Playing time and current disc, title and chapter number
DISC TITLE CHAP HOUR MIN SEC
1. 1. 2. 1:03:24
Remaining time of the current title
DISC TITLE CHAP HOUR MIN SEC
1. 1. 2. -1:15:36
Playing time and number of the current chapter
DISC CHAP HOUR MIN SEC
1. 2. 0:22:30
Remaining time of the current chapter
DISC CHAP HOUR MIN SEC
1. 2. -0:13:20
Text
SONY HITS/S

When playing a VIDEO CD (without PBC functions) or CD


Playing time and current disc, track and index number
DISC TRACK INDEX MIN SEC
1. 2. 1. 2:25
Remaining time of the current track
DISC TRACK INDEX MIN SEC
1. 2. 1. -1:50
Playing time of the disc
DISC MIN SEC
1. 32:12
Remaining time of the disc
DISC MIN SEC
1. -20:18
Text
SONY HITS/S

When playing VIDEO CDs with PBC functions, the scene number and the playing time are displayed.

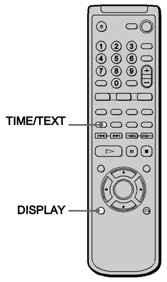
💡 The playing time and remaining time of the current chapter, title, track, scene, or disc will also appear on your TV screen. See the following section “Checking the Playing Time and Remaining Time” for instructions on how to read this information.

Note

Depending on the type of disc being played and the playing mode, the above mentioned disc information may not be displayed.

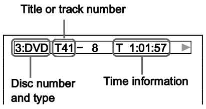
Checking the Playing Time and Remaining Time DVD VIDEO CD CD

You can check the playing time and remaining time of the current title, chapter, or track, and the total playing time or remaining time of the disc. Also, you can check the DVD/CD text recorded on the disc.



1 Press DISPLAY once during playback.

The Status Bar is displayed.



continued ➡

2 Press TIME/TEXT repeatedly to change the time information.

The display and the kinds of time that you can change depend on the disc you are playing.

■When playing a DVD

- T **:**:**
  Playing time of the current title
- T–**:**:**
  Remaining time of the current title
- C **:**:**
  Playing time of the current chapter
- C–**:**:**
  Remaining time of the current chapter

■When playing a VIDEO CD (with PBC functions)

- **:**
  Playing time of the current scene

■When playing a VIDEO CD (without PBC functions) or CD

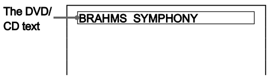
- T **:**
  Playing time of the current track
- T–**:**
  Remaining time of the current track
- D **:**
  Playing time of the current disc
- D–**:**
  Remaining time of the current disc

To turn off the Status Bar

Press DISPLAY repeatedly until the Status Bar is turned off.

Checking the DVD/CD text

Press TIME/TEXT repeatedly in Step 2 to display the text recorded on the DVD/CD.



💡 If the DVD/CD text does not fit on a single line, you can see the entire text by watching it scroll across the front panel display.

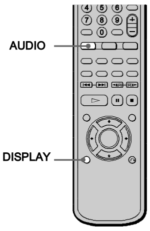
💡 You can select the time and text directly by pressing TIME/TEXT.

Notes

- Only letters of the alphabet can be displayed.
- This player can only display the first level of DVD/CD text, such as the disc’s name or title.

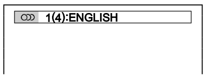
Changing the Sound DVD VIDEO CD CD

If the DVD is recorded with multilingual tracks, you can select the language you want while playing the DVD.
If the DVD is recorded in multiple audio formats (PCM, Dolby Digital, or DTS), you can select the audio format you want while playing the DVD.
With stereo CDs or VIDEO CDs, you can select the sound from the right or left channel and listen to the sound of the selected channel through both the right and left speakers. (In this case, the sound loses its stereo effect.) For example, when playing a disc containing a song with the vocals on the right channel and the instruments on the left channel, you can select the left channel and hear the instruments from both speakers.



1 Press AUDIO during playback.

The Control Bar is displayed.
The number in parentheses indicates the total number of available audio signals.



2 Press AUDIO repeatedly to select the desired audio signal.

■When playing a DVD

Depending on the DVD, the choice of language varies.
When 4 digits are displayed, they represent the language code. Refer to the language code list on page 76 to see which language the code represents.
When the same language is displayed two or more times, the DVD is recorded in multiple audio formats.

■When playing a VIDEO CD or CD

The default setting is underlined.

- STEREO: The standard stereo sound
- 1/L: The sound of the left channel (monaural)
- 2/R: The sound of the right channel (monaural)

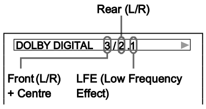
Notes

- For discs not in multiple audio format, you cannot change the sound.
- While playing a DVD, the sound may change automatically.

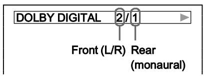
Checking the audio signal format DVD

If you press DISPLAY twice during playback, the format of the current audio signal (Dolby Digital, DTS, PCM, etc.) appears as shown below.

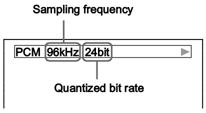
Example
- Dolby Digital 5.1 ch



- Dolby Digital 3 ch



- PCM (Stereo)



About audio signals

Audio signals recorded in a disc contain the sound elements (channels) shown below. Each channel is output from a separate speaker.

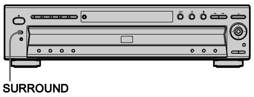
- Front (L)
- Front (R)
- Center
- Rear (L)
- Rear (R)
- Rear (Monaural): This signal can be either the Dolby Surround Sound processed signals or the Dolby Digital sound’s monaural rear audio signals.
- LFE (Low Frequency Effect) signal

Note

If “DTS” is set to “OFF” in “AUDIO SETUP,” the DTS track selection option will not appear on the screen even if the disc contains DTS tracks (page 68).

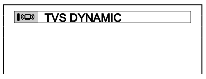
TV Virtual Surround Sound Settings (TVS) DVD VIDEO CD CD

When you connect a stereo TV or 2 front speakers, TV Virtual Surround lets you enjoy surround sound effects by using sound imaging to create virtual rear speakers from the sound of the front speakers (L: left, R: right) without using actual rear speakers. This function is designed to work with the LINE OUT L/R (AUDIO) 1/2 jacks. Note that if you select one of the TVS settings while playing a DVD, the player does not output the Dolby Digital signals from the DIGITAL OUT (COAXIAL or OPTICAL) jack (when you set “DOLBY DIGITAL” in “AUDIO SETUP” to “D-PCM”) (page 68).



1 Press SURROUND during playback.

The Control Bar is displayed.



2 Press SURROUND repeatedly to select one of the TVS (TV Virtual Surround) sounds.

Refer to the explanations given for each item.

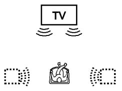
- TVS DYNAMIC
- TVS WIDE
- TVS NIGHT
- TVS STANDARD

To reset the TVS setting

In Step 2, select "OFF."

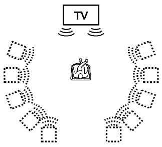
TVS (TV Virtual Surround) DYNAMIC

Uses sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below. The sound imaging effect is distinct and clearly reproduces each aural element of the audio track.
This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.



TVS (TV Virtual Surround) WIDE

Uses sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below. This gives the sound an expanded effect that fills the area surrounding the listener.
This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.

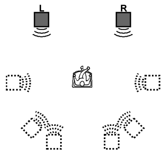


TVS (TV Virtual Surround) NIGHT

The large sounds, such as explosions, are suppressed, but the quieter sounds are unaffected. This feature is useful when you don't want to disturb other people but still want to hear the dialog and enjoy the surround sound effects of TVS WIDE.

TVS (TV Virtual Surround) STANDARD

Uses sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below. Use this setting when you want to use TVS with 2 separate speakers and retain the sound quality.



L: Left front speaker
R: Right front speaker
⬚: Virtual speakers

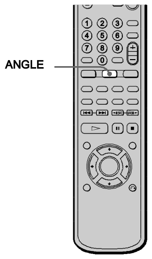
💡 If you select any TVS setting other than "OFF," the indicator on the player lights up.

Notes

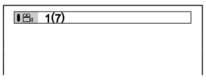
- When you select an effect, the sound cuts off for a moment.
- When the playing signal does not contain a signal for the rear speakers (page 49), the surround effects may be difficult to hear.
- When you select one of the TVS modes, turn off the surround setting of the connected TV or amplifier (receiver).
- Make sure that your listening position is between and at an equal distance from your speakers, and that the speakers are located in similar surroundings. Otherwise, the TVS effect may be hard to discern.
- TVS NIGHT only works with Dolby Digital discs. However, not all discs will respond to the TVS NIGHT function in the same way.
- If you use the DIGITAL OUT (COAXIAL or OPTICAL) jack, sound will come from your speakers but it will not have the TVS effect.

Changing the Angles DVD

If various angles (multi-angles) for a scene are recorded on the DVD, "ANGLE" appears on the front panel display. This means that you can change the viewing angle.
For example, while playing a scene of a train in motion, you can display the view from either the front of the train, the left window of the train, or from the right window without having the train's movement interrupted.



1 Press ANGLE during playback.
The Control Bar is displayed.
The number in parentheses indicates the total number of available angles.



2 Press ANGLE repeatedly to select the angle number.
The scene changes to the selected angle.

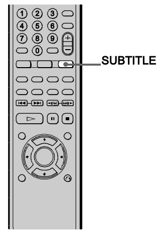
Note

Depending on the DVD, you may not be able to change the angles even if multi-angles are recorded on the DVD.

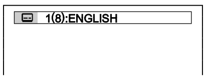
Displaying the Subtitles

DVD

If subtitles are recorded on the disc, you can turn the subtitles on and off whenever you want while playing. If multilingual subtitles are recorded on the disc, you can change the subtitle language while playing, and turn it on or off whenever you want. For example, you can select the language you want to practice and turn the subtitles on for better understanding.



1 Press SUBTITLE during playback.
The Control Bar is displayed.
The number in parentheses indicates the total number of available subtitles.



2 Press SUBTITLE repeatedly to select the language.
Depending on the DVD, the choice of language varies.
When 4 digits are displayed, they indicate the language code. Refer to the language code list on page 76 to see which language the code represents.

To turn off the subtitles

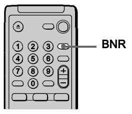
Select "OFF" in Step 2.

Note

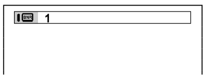
Depending on the DVD, you may not be able to change the subtitles even if multilingual subtitles are recorded on it.

Adjusting the Picture Quality (BNR) DVD VIDEO CD

The Block Noise Reduction (BNR) function adjusts the picture quality by reducing the "block noise" or mosaic like patterns that appear on your TV screen.



1 Press BNR during playback.
The Control Bar is displayed.



2 Press BNR repeatedly to select a level.
As the value increases, the mosaic like patterns on your TV screen will decrease.
- 1: reduces the "block noise."
- 2: reduces the "block noise" more than 1.
- 3: reduces the "block noise" more than 2.

To reset the BNR setting

Select "OFF" in Step 2.

💡 You can also change the BNR value by pressing BNR on the player. If you select any setting other than "OFF," the indicator on the player lights up.

Notes

- If the outlines of the images on your screen should become blurred, set "BNR" to "OFF."
- Depending on the disc or the scene being played, the BNR effect may be hard to discern.

Locking Discs (Custom Parental Control, Parental Control)

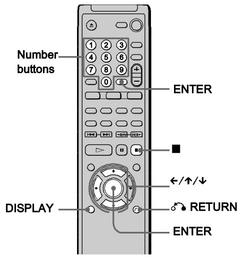
You can set two kinds of playback restrictions for the desired disc.
- Custom Parental Control
  You can set the playback restrictions so that the player will not play inappropriate discs.
- Parental Control
  Playback of some DVDs can be limited according to a predetermined level such as the age of the users.

The same password is used for both Parental Control and Custom Parental Control.

Custom Parental Control

DVD VIDEO CD CD

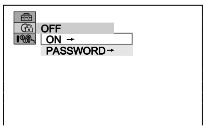
You can set the same Custom Parental Control password for up to 50 discs. When you set the fifty-first disc, the first disc is canceled.



1 Insert the disc you want to lock.
If the disc is playing, press ■ to stop playback.

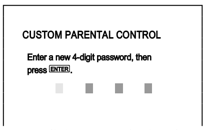
2 Press DISPLAY while the player is in stop mode.
The Control Menu is displayed.

3 Press ↑/↓ to select (CUSTOM PARENTAL CONTROL), then press ENTER.
"CUSTOM PARENTAL CONTROL" is selected.



4 Press ↑/↓ to select "ON →," then press ENTER.

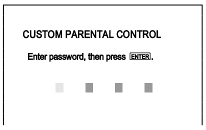
■If you have not entered a password
The display for registering a new password appears.



CUSTOM PARENTAL CONTROL
Enter a new 4-digit password, then press ENTER.

Enter a 4-digit password using the number buttons, then press ENTER.
The display for confirming the password appears.

■When you have already registered a password
The display for entering the password appears.



CUSTOM PARENTAL CONTROL
Enter password, then press ENTER.

5 **Enter or re-enter your 4-digit password using the number buttons, then press ENTER.**
"Custom parental control is set." appears and then the screen returns to the Control Menu display.

If you make a mistake entering your password
Press ← before you press ENTER and input the correct number.

If you make a mistake

Press ↶ RETURN, then start from Step 3 again.

To turn off the Control Menu

Press ↶ RETURN, then press DISPLAY repeatedly until the Control Menu is turned off.

To turn off the Custom Parental Control function

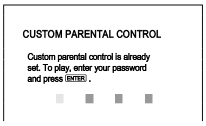
1. In Step 4, select "OFF →," then press ENTER.
2. Enter your 4-digit password using the number buttons, then press ENTER.

To change the password

1. In Step 4, press ↑/↓ to select "PASSWORD →," then press ENTER. The display for entering the password appears.
2. Enter your 4-digit password using the number buttons, then press ENTER.
3. Enter a new 4-digit password using the number buttons, then press ENTER.
4. To confirm your password, re-enter it using the number buttons, then press ENTER.

Playing the disc for which Custom Parental Control is set

1 **Insert the disc for which Custom Parental Control is set.**
The CUSTOM PARENTAL CONTROL display appears.



CUSTOM PARENTAL CONTROL

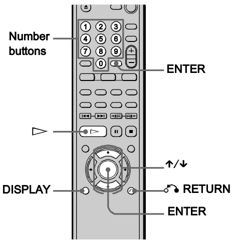
Custom parental control is already set. To play, enter your password and press ENTER .

2 **Enter your 4-digit password using the number buttons, then press ENTER.**
The player is ready for playback.

💡 If you forget your password, enter the 6-digit number "199703" using the number buttons when the CUSTOM PARENTAL CONTROL display asks you for your password, then press ENTER. The display will ask you to enter a new 4-digit password.

Limiting playback by children (Parental Control) DVD

Playback of some DVDs can be limited according to a predetermined level such as the age of the users. The Parental Control function allows you to set a playback limitation level.
A scene that is limited is not played, or it is replaced by a different scene.

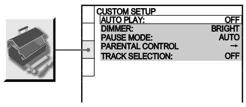


1 **Press DISPLAY while the player is in stop mode.**

2 **Press ↑/↓ to select (SETUP), then press ENTER.**
The Control Menu is displayed.

3 **Press ↑/↓ to select "CUSTOM," then press ENTER.**
The Setup Display appears.

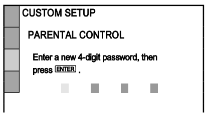
4 **Press ↑/↓ to select "CUSTOM SETUP," then press ENTER.**
"CUSTOM SETUP" is displayed.



CUSTOM SETUP
AUTO PLAY: OFF
DIMMER: BRIGHT
PAUSE MODE: AUTO
PARENTAL CONTROL →
TRACK SELECTION: OFF

5 **Press ↑/↓ to select "PARENTAL CONTROL →," then press ENTER.**

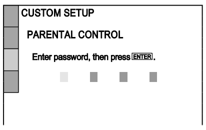
■If you have not entered a password
The display for registering a new password appears.



CUSTOM SETUP
PARENTAL CONTROL
Enter a new 4-digit password, then press ENTER .

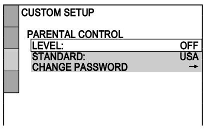
Enter a 4-digit password using the number buttons, then press ENTER.
The display for confirming the password appears.

■When you have already registered a password
The display for entering the password appears.



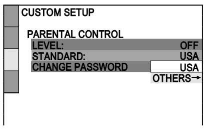
CUSTOM SETUP
PARENTAL CONTROL
Enter password, then press ENTER.

6 **Enter or re-enter your password using the number buttons, then press ENTER.**
The display for setting the playback limitation level and changing the password appears.



CUSTOM SETUP
PARENTAL CONTROL
LEVEL: OFF
STANDARD: USA
CHANGE PASSWORD →

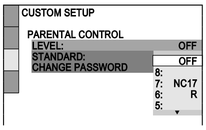
7 **Press ↑/↓ to select "STANDARD," then press ENTER.**
The selection items for "STANDARD" are displayed.



CUSTOM SETUP
PARENTAL CONTROL
LEVEL: OFF
STANDARD: USA
CHANGE PASSWORD
USA
OTHERS→

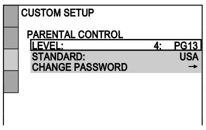
8 **Press ↑/↓ to select a geographic area as the playback limitation level, then press ENTER.**
The area is selected.
When you select "OTHERS →," select and enter the standard code in the table on page 58 using the number buttons.

9 **Press ENTER.**
The selection items for "LEVEL" are displayed.



CUSTOM SETUP
PARENTAL CONTROL
LEVEL: OFF
STANDARD:
CHANGE PASSWORD
OFF
8:
7: NC17
6: R
5:

10 **Select the level you want using ↑/↓, then press ENTER.**
Parental Control setting is complete.



CUSTOM SETUP
PARENTAL CONTROL
LEVEL: 4: PG13
STANDARD: USA
CHANGE PASSWORD →

The lower the value, the more strict the limitation.

If you make a mistake

Press ↶ RETURN to go back to the previous screen.

To turn off the Control Menu

Press DISPLAY repeatedly until the Control Menu is turned off.

To turn off the Parental Control function and play the DVD after entering your password

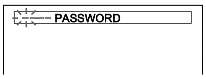
Set "LEVEL" to "OFF" in Step 10.

To change the password

1. In Step 7, select "CHANGE PASSWORD →" using ↓, then press ENTER. The display for entering the password appears.
2. Follow Step 6 to enter a new password.

Playing the disc for which Parental Control is set

1 **Insert the disc and press ▷.**
The Control Bar appears.



PASSWORD

2 **Enter your 4-digit password using the number buttons, then press ENTER.**
The player starts playback.

💡 If you forget your password, remove the disc and repeat Step 1 to 5 of "Limiting playback by children." When you are asked to enter your password, enter "199703" using the number buttons, then press ENTER. The display will ask you to enter a new 4-digit password. After you enter a new 4-digit password in Step 6, replace the disc in the player and press ▷. When the Control Bar appears, enter your new password.

Note

When you play DVDs which do not have the Parental Control function, playback cannot be limited on this player.

Area Code

Standard	Code number	Standard	Code number
Argentina	2044	Korea	2304
Australia	2047	Malaysia	2363
Austria	2046	Mexico	2362
Belgium	2057	Netherlands	2376
Brazil	2070	New Zealand	2390
Canada	2079	Norway	2379
Chile	2090	Pakistan	2427
China	2092	Philippines	2424
Denmark	2115	Portugal	2436
Finland	2165	Russia	2489
France	2174	Singapore	2501
Germany	2109	Spain	2149
Hong Kong	2219	Sweden	2499
India	2248	Switzerland	2086
Indonesia	2238	Taiwan	2543
Italy	2254	Thailand	2528
Japan	2276	United Kingdom	2184

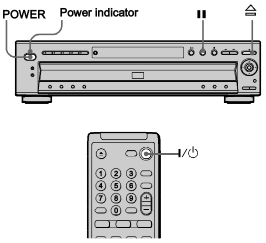
Operation Sound Effects

(Sound Feedback)

The player beeps when the following operations are performed.
The default setting of the Sound Feedback function is set to off.

Operation	Operation sound
Power is turned on	One beep
Power is turned off	Two beeps
▷ is pressed	One beep
❚❚ is pressed	Two beeps
Playback is stopped	One long beep
Operation is not possible	Three beeps

To set Sound Feedback



1 **Press POWER on the player, then press I/⏻ on the remote.**
The power indicator lights up in green. When there is a disc in the player, press ⏏ and remove the disc. Then press ⏏ again to close the disc tray.

2 **Press and hold ❚❚ on the player for more than two seconds.**
You will hear one beep and the Sound Feedback function is turned on.

To turn off the Sound Feedback function

When there is no disc in the player, press and hold ❚❚ on the player for more than two seconds. You will hear two beeps and the Sound Feedback function is turned off.

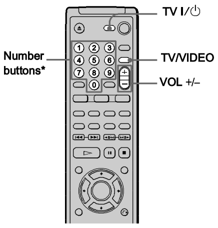
Controlling Your TV or AV Amplifier (Receiver) with the Supplied Remote

By adjusting the remote signal, you can control your TV or AV amplifier (receiver) with the supplied remote.
If you connect the player with an AV amplifier (receiver), you can control the volume with the supplied remote.

Notes

- Depending on the units being connected, you may not be able to control your TV or AV amplifier (receiver) using some of the buttons below.
- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries of the remote, the code number may be reset to the default setting. Reset the appropriate code number.

Controlling TVs with the remote



1 **Hold down TV I/⏻, and enter your TV's manufacturer's code (see the table) using the number buttons.**

2 **Release TV I/⏻.**

Code number of controllable TVs

If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

Manufacturer	Code number	Manufacturer	Code number
Sony (default)	01	Panasonic	06, 19
Akai	04	Philco	03, 04
AOC	04	Philips	08
Centurion	12	Pioneer	16
Coronado	03	Portland	03
Curtis-Mathes	12	Quasar	06, 18
Daytron	12	Radio Shack	05, 14
Emerson	03,04,14	RCA	04, 10
Fisher	11	Sampo	12
General Electric	06, 10	Sanyo	11
Gold Star	03,04,17	Scott	12
Hitachi	02,03	Sears	07,10,11
J. C. Penney	04,12	Sharp	03,05,18
JVC	09	Sylvania	08, 12
KMC	03	Teknika	03,08,14
Magnavox	03,08,12	Toshiba	07
Marantz	04, 13	Wards	03,04,12
MGA/Mitsubishi	04,12,13,17	Yorx	12
NEC	04, 12	Zenith	15

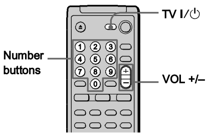
Controlling the TV

You can control your TV using the buttons below.

By pressing	You can
TV I/⏻	Turn the TV on or off
VOL (volume) +/–	Adjust the volume of the TV
TV/VIDEO	Switch the TV's input source between the TV and other input sources

* Use the number buttons only to enter the code number of controllable TVs.

Controlling AV amplifiers (receivers) with the remote



1 **Hold down TV I/⏻, and enter your AV amplifier's (receiver's) manufacturer's code (see the table) using the number buttons.**

2 **Release TV I/⏻.**

Code numbers of controllable AV amplifiers (receivers)

If more than one code number is listed, try entering them one at a time until you find the one that works with your AV amplifier (receiver).

Manufacturer	Code number
Sony	91, 89
Denon	84, 85, 86
Kenwood	92, 93
Onkyo	81, 82, 83
Pioneer	99
Sansui	87
Technics	97, 98
Yamaha	94, 95, 96

Controlling the AV amplifier (receiver)

You can change the volume of the AV amplifier (receiver) using VOL +/–.

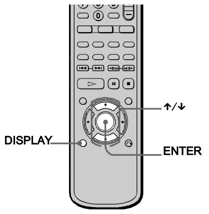
Settings and Adjustments

Using the Setup Display

DVD VIDEO CD CD

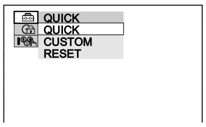
By using the Setup Display, you can make various adjustments to items such as picture and sound. You can also set a language for the subtitles and the Setup Display, among other things. For details on each Setup Display item see page 63 through 68. For an overall list of Setup Display items, see page 77.

How to use the Setup Display

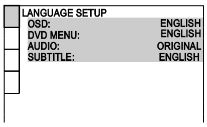


1 **Press DISPLAY on the remote when the player is in stop mode.**
The Control Menu Appears.

2 **Press ↑/↓ to select (SETUP) and press ENTER.**
The options for SETUP appear.

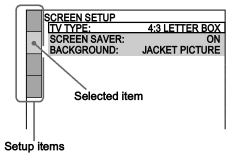


3 **Press ↑/↓ to select "CUSTOM" and press ENTER.**
The Setup Display appears.



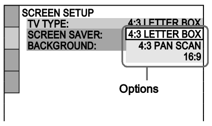
LANGUAGE SETUP
OSD: ENGLISH
DVD MENU: ENGLISH
AUDIO: ORIGINAL
SUBTITLE: ENGLISH

4 **Press ↑/↓ to select the setup item from the displayed list: "LANGUAGE SETUP," "SCREEN SETUP," "CUSTOM SETUP," or "AUDIO SETUP." Then press ENTER.**
The selected setup item appears.
Example: SCREEN SETUP



SCREEN SETUP
TV TYPE: 4:3 LETTER BOX
SCREEN SAVER: ON
BACKGROUND: JACKET PICTURE

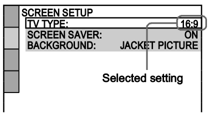
5 **Select an item using ↑/↓, then press ENTER.**
The options for the selected item appear.
Example: TV TYPE



SCREEN SETUP
TV TYPE: 4:3 LETTER BOX
SCREEN SAVER:
BACKGROUND:
4:3 LETTER BOX
4:3 PAN SCAN
16:9

6 Select a setting using ↑/↓, then press ENTER.

The setting is selected and setup is complete.
Example: 16:9



SCREEN SETUP
TV TYPE: 16:9
SCREEN SAVER: ON
BACKGROUND: JACKET PICTURE

To turn off the Setup Display

Press DISPLAY repeatedly until the Setup Display is turned off.

💡 If you select “QUICK” in Step 3, you will enter the Quick Setup mode (page 28).
Follow from Step 5 of the Quick Setup explanation to make basic adjustments.

💡 If you select “RESET” in Step 3, you can reset all of the “SETUP” settings on pages 77 to 78 (except for “PARENTAL CONTROL”) to the default settings.
After you select “RESET” and press ENTER, select “YES” and press ENTER to reset the settings (it takes a few seconds to complete), or select “NO” and press ENTER to return to the Control Menu. Do not press POWER or I/⏻ when resetting the player.

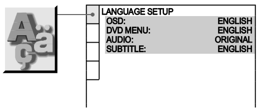
Setting the Display or Sound Track Language

(LANGUAGE SETUP)

DVD VIDEO CD CD

“LANGUAGE SETUP” allows you to set various languages for the on-screen display or sound track.

Select “LANGUAGE SETUP” in the Setup Display. For details on using the display, see “Using the Setup Display” (page 62).



LANGUAGE SETUP
OSD: ENGLISH
DVD MENU: ENGLISH
AUDIO: ORIGINAL
SUBTITLE: ENGLISH

■OSD (On-Screen Display)

Switches the display language on the screen. Selects the language from the displayed list.

■DVD MENU (DVD only)

You can select the desired language for the DVD menu.

■AUDIO (DVD only)

Switches the language of the sound track. Selects the language from the displayed list. When you select “ORIGINAL,” the language given priority in the disc is selected.

■SUBTITLE (DVD only)

Switches the language of the subtitles recorded on the DVD.
Select the language from the displayed list.
When you select “AUDIO FOLLOW,” the language for the subtitles changes according to the language you selected for the sound track.

continued ➡

💡 If you select “OTHERS →” in “DVD MENU,” “SUBTITLE,” and “AUDIO,” select and enter the language code from the list using the number buttons (page 76).
After you have made a selection, the language code (4 digits) is displayed the next time you select “OTHERS →.”

Note

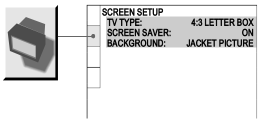
When you select a language that is not recorded on the DVD, one of the recorded languages will be automatically selected (except for the “OSD”).

Settings for the Display

(SCREEN SETUP) DVD VIDEO CD CD

Choose settings according to the TV to be connected.

Select “SCREEN SETUP” in the Setup Display. For details on using the display, see “Using the Setup Display” (page 62).
The default settings are underlined.



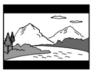
SCREEN SETUP
TV TYPE: 4:3 LETTER BOX
SCREEN SAVER: ON
BACKGROUND: JACKET PICTURE

■TV TYPE (DVD only)

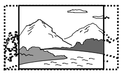
Selects the aspect ratio of the connected TV (4:3 standard or wide).

4:3 LETTER BOX	Select this when you connect a 4:3 screen TV. Displays a wide picture with bands on the upper and lower portions of the screen.
4:3 PAN SCAN	Select this when you connect a 4:3 screen TV. Automatically displays the wide picture on the entire screen and cuts off the portions that do not fit.
16:9	Select this when you connect a wide-screen TV or a TV with a wide mode function.

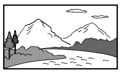
4:3 LETTER BOX



4:3 PAN SCAN



16:9



Note

Depending on the DVD, “4:3 LETTER BOX” may be selected automatically instead of “4:3 PAN SCAN” or vice versa.

■SCREEN SAVER

Turns on and off the screen saver so that the screen saver image appears when you leave the player in pause or stop mode for 15 minutes, or when you play back a CD for more than 15 minutes. The screen saver will help prevent your display device from becoming damaged (ghosting). Press ▷ to turn off the screen saver.

ON	Turns on the screen saver.
OFF	Turns off the screen saver.

■BACKGROUND

Selects the background color or picture on the TV screen in stop mode or while playing a CD.

JACKET PICTURE	The jacket picture (still picture) appears in the background, but only when the jacket picture is already recorded on the disc (CD-EXTRA, etc.). If the disc does not contain a jacket picture, the “GRAPHICS” picture appears.
GRAPHICS	A preset picture stored in the player appears in the background.
BLUE	The background color is blue.
BLACK	The background color is black.

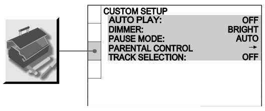
Custom Settings

(CUSTOM SETUP)

DVD VIDEO CD CD

Allows setting up Parental Control and other settings.

Select “CUSTOM SETUP” in the Setup Display. For details on using the display, see “Using the Setup Display” (page 62).
The default settings are underlined.



CUSTOM SETUP
AUTO PLAY: OFF
DIMMER: BRIGHT
PAUSE MODE: AUTO
PARENTAL CONTROL →
TRACK SELECTION: OFF

■AUTO PLAY

Selects the Auto Play setting when you turn on the player.

OFF	Does not use “TIMER,” “DEMO1,” or “DEMO2” to start playback.
TIMER	Starts playing when the player is turned on. The player can be played at any time when connected to a timer (not supplied). Set the timer when the player is in standby mode (the power indicator lights up in red).
DEMO1	Starts playing the first demonstration automatically.
DEMO2	Starts playing the second demonstration automatically.

■DIMMER

Adjusts the lighting of the front panel display.

BRIGHT	Makes the front panel display bright.
DARK	Makes the front panel display dark.
OFF	Turns off the lighting of the front panel display.

continued ➡

■PAUSE MODE (DVD only)

Selects the picture in pause mode.

AUTO	The picture, including subjects that move dynamically, is output with no jitter. Normally, select this position.
FRAME	The picture, including subjects that do not move dynamically, is output in high resolution.

■PARENTAL CONTROL → (DVD only)

Sets a password and playback limitation level for DVDs with playback limitation for children. For details, see “Limiting playback by children (Parental Control)” (page 56).

■TRACK SELECTION (DVD only)

Gives the sound track which contains the highest number of channels priority when you play a DVD on which multiple audio formats (PCM, DTS or Dolby Digital format) are recorded.

OFF	No priority given.
AUTO	Priority given.

Notes

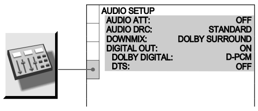
- When you set the item to “AUTO,” the language may change. The “TRACK SELECTION” setting has higher priority than the “AUDIO” settings in “LANGUAGE SETUP” (page 63).
- If you set “DTS” to “OFF” (page 68), the DTS sound track is not played even if you set “TRACK SELECTION” to “AUTO.”
- If PCM, DTS and Dolby Digital sound tracks have the same number of channels, the player selects PCM, DTS and Dolby Digital sound tracks in this order.
- Depending on the DVD, the audio channel with priority may be predetermined. In this case, you cannot give priority to the DTS or Dolby Digital format by selecting “AUTO.”

Settings for the Sound

(AUDIO SETUP)

“AUDIO SETUP” allows you to set the sound according to the playback and connection conditions.

Select “AUDIO SETUP” in the Setup Display. For details on using the display, see “Using the Setup Display” (page 62).
The default settings are underlined.



AUDIO SETUP
AUDIO ATT: OFF
AUDIO DRC: STANDARD
DOWNMIX: DOLBY SURROUND
DIGITAL OUT: ON
DOLBY DIGITAL: D-PCM
DTS: OFF

■AUDIO ATT (attenuation)

If the playback sound is distorted, set this item to “ON.” The player reduces the audio output level.
This function affects the output of the LINE OUT L/R (AUDIO) 1/2 jacks.

OFF	Turns off the audio attenuation. Normally, select this position.
ON	Reduces the audio output level so that no sound distortion occurs. Select this when the playback sound from the speakers is distorted.

■AUDIO DRC (Dynamic Range Control) (DVD only)

Makes the sound clear when the volume is turned down when playing a DVD that has the AUDIO DRC function. This affects the output from the following jacks:
–LINE OUT L/R (AUDIO) 1/2 jacks
–DIGITAL OUT (COAXIAL or OPTICAL) jack only when “DOLBY DIGITAL” is set to “D-PCM” in “DIGITAL OUT” (page 67).

STANDARD	Normally, select this position.
TV MODE	Makes the low sounds clear even if you turn the volume down. It is especially recommended when you listen to the sound using the speakers of the TV.
WIDE RANGE	Gives you the feeling of being at a live performance. When you use high quality speakers, it is even more effective.

■DOWNMIX (DVD only)

Switches the mixing down methods when you play a DVD on which rear signal components such as LS, RS, or S are recorded in Dolby Digital format. For details on the rear signal components, see “Changing the Sound” (page 49). This function affects the output of the following jacks:
–LINE OUT L/R (AUDIO) 1/2 jacks
–DIGITAL OUT (COAXIAL or OPTICAL) jack when “DOLBY DIGITAL” is set to “D-PCM” in “DIGITAL OUT” (page 67).

DOLBY SURROUND	Select this when the player is connected to an audio component that conforms to Dolby Surround (Pro Logic). The output signals which reproduce the Dolby Surround effect are downmixed to 2 channels.
NORMAL	Select this when the player is connected to an audio component that does not conform to Dolby Surround (Pro Logic). All of the output signals are downmixed to 2 channels without the Dolby Surround (Pro Logic) effect.

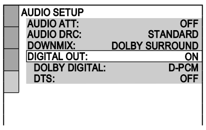
■DIGITAL OUT

Selects if audio signals are output via the DIGITAL OUT (COAXIAL or OPTICAL) jack.

ON	Normally, select this position. When you select “ON,” set “DOLBY DIGITAL” and “DTS.” For details on setting these items, see “Setting the digital output signal.”
OFF	The player does not output the audio signals via the DIGITAL OUT (COAXIAL or OPTICAL) jack. The influence of the digital circuit upon the analog circuit is minimal.

Setting the digital output signal

Switches the method of outputting audio signals when you connect the following component using a coaxial digital or optical digital cord via the DIGITAL OUT (COAXIAL or OPTICAL) jack.
–Amplifier (receiver) with digital input jack
–Amplifier (receiver) with a built-in DTS or DOLBY DIGITAL decoder
–MD or DAT deck
For connection details, see page 20.
Select “DOLBY DIGITAL” and “DTS” after setting “DIGITAL OUT” to “ON.”


AUDIO SETUP
AUDIO ATT: OFF
AUDIO DRC: STANDARD
DOWNMIX: DOLBY SURROUND
DIGITAL OUT: ON
DOLBY DIGITAL: D-PCM
DTS: OFF

continued ➡

■DOLBY DIGITAL

Selects the Dolby Digital signals output via the DIGITAL OUT (COAXIAL or OPTICAL) jack.

D-PCM	Select this when the player is connected to an audio component lacking a built-in Dolby Digital decoder. You can select whether the signals conform to Dolby Surround (Pro Logic) or not by making adjustments to the “DOWNMIX” item in “AUDIO SETUP” (page 67).
DOLBY DIGITAL	Select this when the player is connected to an audio component with a built-in Dolby Digital decoder. If the player is connected to an audio component lacking a built-in Dolby Digital decoder, do not set this. Otherwise, when you play the Dolby Digital sound track, a loud noise (or no sound) will come out from the speakers, affecting your ears or causing the speakers to be damaged.

■DTS

Selects if DTS signals are output via the DIGITAL OUT (COAXIAL or OPTICAL) jack.

OFF	Select this when the player is connected to an audio component lacking a built-in DTS decoder. Note, however, that the DTS signals contained in a CD are output even if “OFF” is selected.
ON	Select this when the player is connected to an audio component having a built-in DTS decoder. If the player is connected to an audio component lacking a built-in DTS decoder, do not set this. Otherwise, when you play the DTS sound track, a loud noise (or no sound) will come out from the speakers, affecting your ears or causing the speakers to be damaged.

Note

If you select one of the TVS settings while playing a DVD, the player does not output the Dolby Digital signals from the DIGITAL OUT (COAXIAL or OPTICAL) jack (when you set “DOLBY DIGITAL” in “AUDIO SETUP” to “D-PCM”).

Troubleshooting

If you experience any of the following difficulties while using the player, use this troubleshooting guide to help remedy the problem before requesting repairs. Should any problem persist, consult your nearest Sony dealer.

Power

The power is not turned on.

➡ Check that the AC power cord is connected securely.

Picture

There is no picture.

➡ The connecting cords are not connected securely.
➡ The connecting cords are damaged.
➡ The player is not connected to the correct TV input jack (page 18).
➡ The video input on the TV is not set so that you can view pictures on the player.

Picture noise appears.

➡ The disc is dirty or flawed.
➡ If the picture output from your player goes through your VCR to get to your TV, the copy-protection signal applied to some DVD programs could affect picture quality. If you still experience problems even when you connect your player directly to your TV, please try connecting your player to your TV’s S video input (page 18).

Even though you set the aspect ratio in “TV TYPE” of “SCREEN SETUP,” the picture does not fill the screen.

➡ The aspect ratio of the disc is fixed on your DVD.

Sound

There is no sound.

➡ The connecting cord is not connected securely.
➡ The connecting cord is damaged.
➡ The player is connected to the wrong input jack on the amplifier (receiver) (page 20, 22, 24).
➡ The amplifier (receiver) input is not changed so that you can listen to the player.
➡ The player is in pause mode or in Slow-motion play mode.
➡ The player is in fast forward or fast reverse mode.
➡ If the audio signal does not come through the DIGITAL OUT (COAXIAL or OPTICAL) jack, check the audio settings (page 66).

Sound is noisy.

➡ The disc is dirty or flawed.
➡ When playing a CD with DTS sound tracks, noise will come from the LINE OUT L/R (AUDIO) 1/2 jacks (page 33).

Sound distortion occurs.

➡ Set “AUDIO ATT” in “AUDIO SETUP” to “ON” (page 66).

Operation

The remote does not function.

➡ There are obstacles between the remote and the player.
➡ The distance between the remote and the player is too far.
➡ The remote is not pointed at the remote sensor on the player.
➡ The batteries in the remote are weak.

The disc does not play.

➡ There is no disc inside.
➡ The disc is turned over.
Insert the disc with the playback side facing down on the disc tray.
➡ The disc is skewed.
➡ The player cannot play CD-ROMs, etc. (page 7).
➡ The region code on the DVD does not match the player.
➡ Moisture has condensed inside the player.
Remove the disc and leave the player turned on for about half an hour. Turn on the power again before playing the disc (page 3).

The disc does not start playing from the beginning.

➡ Program Play, Shuffle Play, Repeat Play or A-B Repeat Play has been selected (page 38).
Press CLEAR to cancel these functions before playing a disc.
➡ Resume Play has been selected.
During stop, press ■ on the player or the remote and then start playback (page 35).
➡ The title, DVD or PBC menu automatically appears on the TV screen.

The player starts playing the disc automatically.

➡ The DVD features an auto playback function.
➡ “AUTO PLAY” in “CUSTOM SETUP” is set to “TIMER” (page 65).

Playback stops automatically.

➡ Some discs may contain an auto pause signal. While playing such a disc, the player stops playback at the auto pause signal.

You cannot perform some functions such as stop, Scan, Slow-motion Play, Repeat Play, Shuffle Play, or Program Play.

➡ Depending on the disc, you may not be able to do some of the operations above. See the operating manual that comes with the disc.

Messages do not appear on the screen in the language you want.

➡ In the Setup Display, select the desired language for the on-screen display in “OSD” under “LANGUAGE SETUP” (page 63).

The language for the sound track cannot be changed.

➡ Multilingual tracks are not recorded on the DVD being played.
➡ The DVD prohibits the changing of the language for the sound track.

The subtitle language cannot be changed.

➡ Multilingual subtitles are not recorded on the DVD being played.
➡ The DVD prohibits the changing of the subtitles.

The subtitle cannot be turned off.

➡ The DVD prohibits the subtitles being turned off.

The angles cannot be changed.

➡ Multi-angles are not recorded on the DVD being played. The angle can be changed when the “ANGLE” indicator lights up on the front panel display (page 10).
➡ The DVD prohibits changing of the angles.

continued ➡

The player does not operate properly.

➡ When static electricity, etc., causes the player to operate abnormally, press POWER on the player to turn the player off and then on again.

Nothing is displayed on the front panel display.

➡ “DIMMER” in “CUSTOM SETUP” is set to “OFF.” Set “DIMMER” to “BRIGHT” or “DARK” (page 65).

5 numbers or letters are displayed on the screen and on the front panel display.

➡ The self-diagnosis function was activated. (See the table on page 71.)

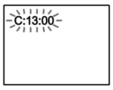
The disc tray does not open and “LOCKED” appears on the front panel display.

➡ Contact your Sony dealer or local authorized Sony service facility.

Self-diagnosis Function

(When letters/numbers appear in the display)

When the self-diagnosis function is activated to prevent the player from malfunctioning, a five-character service number (e.g., C 13 00) with a combination of a letter and digits appears on the screen and the front panel display. In this case, check the following table.



First three characters of the service number	Cause and/or corrective action
C 13	The disc is dirty. ➡ Clean the disc with a soft cloth (page 8).
C 31	The disc is not inserted correctly. ➡ Re-insert the disc correctly.
E XX (xx is a number)	To prevent a malfunction, the player has performed the self-diagnosis function. ➡ Contact your nearest Sony dealer or local authorized Sony service facility and give the 5-character service number. Example: E 61 10

Glossary

Chapter (page 10)

Sections of a picture or a music feature that are smaller than titles. A title is composed of several chapters. Depending on the disc, no chapters may be recorded.

Dolby Digital (page 20, 67)

Digital audio compression technology developed by Dolby Laboratories. This technology conforms to 5.1-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. Dolby Digital provides the same 5.1 discrete channels of high quality digital audio found in Dolby Digital cinema audio systems. Good channel separation is realized because all of the channel data are recorded discretely and little deterioration is realized because all channel data processing is digital.

Dolby Surround (Pro Logic) (page 67)

Audio signal processing technology that Dolby Laboratories developed for surround sound. When the input signal contains a surround component, the Pro Logic process outputs the front, center, and rear signals. The rear channel is monaural.

DTS (page 20, 67)

Digital audio compression technology that Digital Theater Systems, Inc. developed. This technology conforms to 5.1-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. DTS provides the same 5.1 discrete channels of high quality digital audio.

Good channel separation is realized because all of the channel data is recorded discretely and little deterioration is realized because all channel data processing is digital.

DVD (page 7)

A disc that contains up to 8 hours of moving pictures even though its diameter is the same as a CD.

The data capacity of a single-layer and single-sided DVD is 4.7 GB (Giga Byte), which is 7 times that of a CD. The data capacity of a double-layer and single-sided DVD is 8.5 GB, a single-layer and double-sided DVD is 9.4 GB, and double-layer and double-sided DVD is 17 GB.

The picture data uses the MPEG 2 format, one of the worldwide standards of digital compression technology. The picture data is compressed to about 1/40 (average) of its original size. The DVD also uses a variable rate coding technology that changes the data to be allocated according to the status of the picture. Audio information is recorded in Dolby Digital as well as in PCM, allowing you to enjoy a more real audio presence.

Furthermore, various advanced functions such as the multi-angle, multilingual, and Parental Control functions are provided with the DVD.

Index (CD)/Video Index (VIDEO CD) (page 10)

A number that divides a track into sections to easily locate the point you want on a VIDEO CD or CD. Depending on the disc, no index may be recorded.

Parental Control (page 56)

A function of the DVD used to limit playback of the disc according to the age of the user and the limitation level in each country. The limitation varies from disc to disc; when it is activated, or playback is completely prohibited, violent scenes are skipped or replaced with other scenes, etc.

Region Code (page 7)

This system is used to protect copyrights. A region number is allocated on each DVD player or DVD disc according to the sales region. Each region code is shown on the player as well as on the disc packaging. The player can play the discs that match its region code. The player can also play discs with the 🌐 mark. Even when the region code is not shown on the DVD, the region limit may still be activated.

Scene (page 10)

On a VIDEO CD with PBC (playback control) functions, the menu screens, moving pictures and still pictures are divided into sections called “scenes.”

Title (page 10)

The longest section of a picture or music feature on a DVD, movie, etc., in video software, or the entire album in audio software.

Track (page 10)

Sections of a picture or a music feature on a VIDEO CD or CD (the length of a song).

TV Virtual Surround (TVS) (page 50)

Technology from Sony developed to produce surround sound for home use using just a stereo TV. Designed to work with the sound characteristics of your TV, this technology brings the excitement of surround sound to your home using nothing more than your stereo TV’s internal speakers. Furthermore, various TVS modes are available. For example, TVS WIDE uses just two speakers to create a virtual sound environment that makes you feel like you are surrounded by multiple speakers.

Language Code List

For details, see page 49, 52, 63.
The language spellings conform to the ISO 639: 1988 (E/F) standard.

Code	Language	Code	Language	Code	Language	Code	Language
1027	Afar	1183	Irish	1347	Maori	1507	Samoan
1028	Abkhazian	1186	Scots Gaelic	1349	Macedonian	1508	Shona
1032	Afrikaans	1194	Galician	1350	Malayalam	1509	Somali
1039	Amharic	1196	Guarani	1352	Mongolian	1511	Albanian
1044	Arabic	1203	Gujarati	1353	Moldavian	1512	Serbian
1045	Assamese	1209	Hausa	1356	Marathi	1513	Siswati
1051	Aymara	1217	Hindi	1357	Malay	1514	Sesotho
1052	Azerbaijani	1226	Croatian	1358	Maltese	1515	Sundanese
1053	Bashkir	1229	Hungarian	1363	Burmese	1516	Swedish
1057	Byelorussian	1233	Armenian	1365	Nauru	1517	Swahili
1059	Bulgarian	1235	Interlingua	1369	Nepali	1521	Tamil
1060	Bihari	1239	Interlingue	1376	Dutch	1525	Telugu
1061	Bislama	1245	Inupiak	1379	Norwegian	1527	Tajik
1066	Bengali; Bangla	1248	Indonesian	1393	Occitan	1528	Thai
1067	Tibetan	1253	Icelandic	1403	(Afan) Oromo	1529	Tigrinya
1070	Breton	1254	Italian	1408	Oriya	1531	Turkmen
1079	Catalan	1257	Hebrew	1417	Punjabi	1532	Tagalog
1093	Corsican	1261	Japanese	1428	Polish	1534	Setswana
1097	Czech	1269	Yiddish	1435	Pashto; Pushto	1535	Tonga
1103	Welsh	1283	Javanese	1436	Portuguese	1538	Turkish
1105	Danish	1287	Georgian	1463	Quechua	1539	Tsonga
1109	German	1297	Kazakh	1481	Rhaeto-Romance	1540	Tatar
1130	Bhutani	1298	Greenlandic	1482	Kirundi	1543	Twi
1142	Greek	1299	Cambodian	1483	Romanian	1557	Ukrainian
1144	English	1300	Kannada	1489	Russian	1564	Urdu
1145	Esperanto	1301	Korean	1491	Kinyarwanda	1572	Uzbek
1149	Spanish	1305	Kashmiri	1495	Sanskrit	1581	Vietnamese
1150	Estonian	1307	Kurdish	1498	Sindhi	1587	Volapük
1151	Basque	1311	Kirghiz	1501	Sangho	1613	Wolof
1157	Persian	1313	Latin	1502	Serbo-Croatian	1632	Xhosa
1165	Finnish	1326	Lingala	1503	Singhalese	1665	Yoruba
1166	Fiji	1327	Laothian	1505	Slovak	1684	Chinese
1171	Faroese	1332	Lithuanian	1506	Slovenian	1697	Zulu
1174	French	1334	Latvian; Lettish				
1181	Frisian	1345	Malagasy				

Code	Language
1703	Not specified

List of Setup Display Items

The default settings are underlined.

LANGUAGE SETUP (page 63)

OSD	ENGLISH FRENCH SPANISH PORTUGUESE
DVD MENU	ENGLISH FRENCH SPANISH PORTUGUESE GERMAN ITALIAN DUTCH CHINESE JAPANESE DANISH SWEDISH FINNISH NORWEGIAN RUSSIAN OTHERS →
AUDIO	ORIGINAL (All other selections are same as the DVD MENU language.)
SUBTITLE	AUDIO FOLLOW (All other selections are same as the DVD MENU language.)

SCREEN SETUP (page 64)

TV TYPE	4:3 LETTER BOX 4:3 PAN SCAN 16:9
SCREEN SAVER	ON OFF
BACKGROUND	JACKET PICTURE GRAPHICS BLUE BLACK

CUSTOM SETUP (page 65)

AUTO PLAY	OFF TIMER DEMO1 DEMO2
DIMMER	BRIGHT DARK OFF
PAUSE MODE	AUTO FRAME
PARENTAL CONTROL ➡	
TRACK SELECTION	OFF AUTO

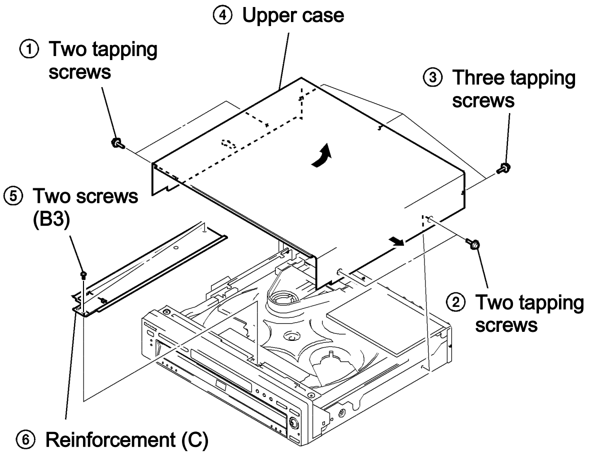
AUDIO SETUP (page 66)

AUDIO ATT	OFF ON		
AUDIO DRC	STANDARD TV MODE WIDE RANGE		
DOWNMIX	DOLBY SURROUND NORMAL		
DIGITAL OUT	ON	DOLBY DIGITAL	D-PCM DOLBY DIGITAL
		DTS	OFF ON
	OFF		

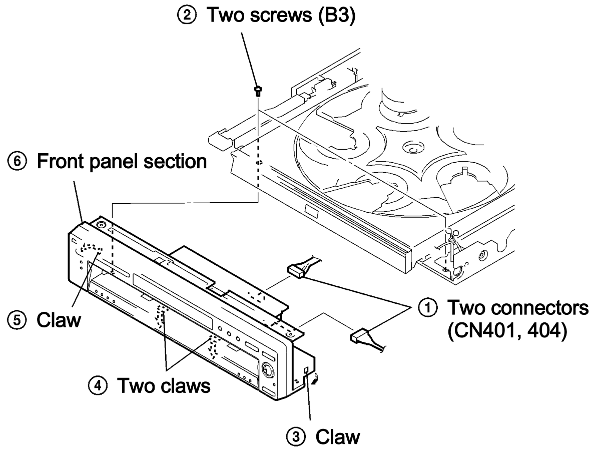
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

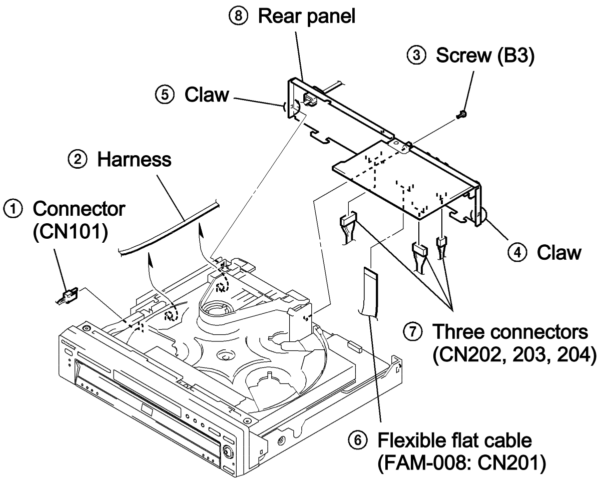
2-1. UPPER CASE, REINFORCEMENT (C) REMOVAL


④ Upper case
① Two tapping screws
③ Three tapping screws
⑤ Two screws (B3)
② Two tapping screws
⑥ Reinforcement (C)

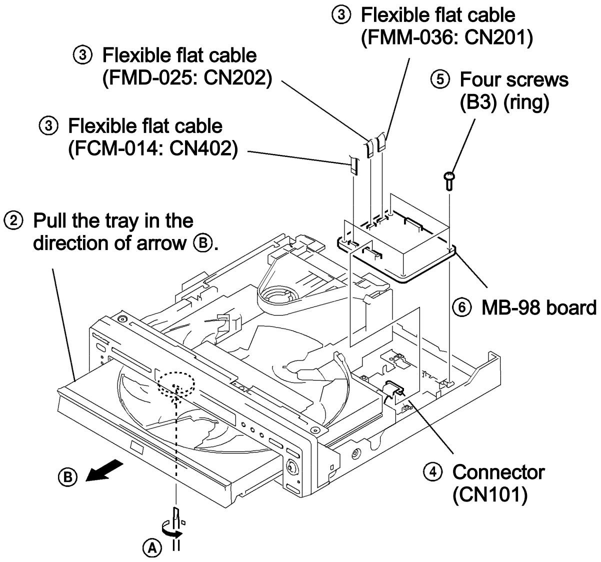
2-2. FRONT PANEL SECTION REMOVAL


② Two screws (B3)
⑥ Front panel section
① Two connectors (CN401, 404)
⑤ Claw
④ Two claws
③ Claw

2-3. REAR PANEL REMOVAL

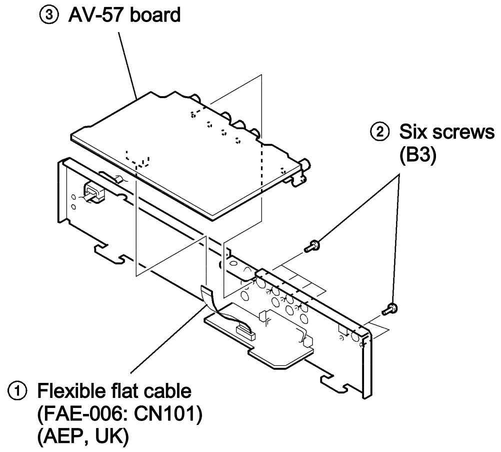

⑧ Rear panel
③ Screw (B3)
⑤ Claw
② Harness
① Connector (CN101)
④ Claw
⑦ Three connectors (CN202, 203, 204)
⑥ Flexible flat cable (FAM-008: CN201)

2-4. MB-98 BOARD REMOVAL

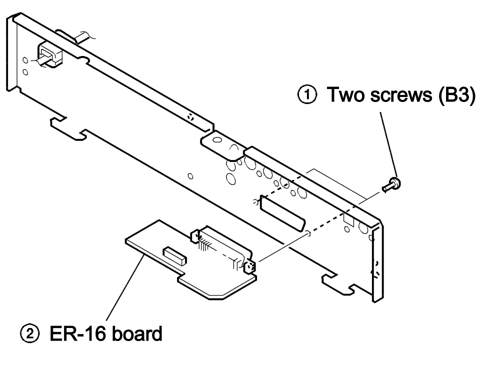

③ Flexible flat cable (FMM-036: CN201)
③ Flexible flat cable (FMD-025: CN202)
⑤ Four screws (B3) (ring)
③ Flexible flat cable (FCM-014: CN402)
② Pull the tray in the direction of arrow Ⓑ.
⑥ MB-98 board
Ⓑ
④ Connector (CN101)
Ⓐ

① Insert a flat-blade screwdriver into a hole at the bottom, and rotate the cam gear in the direction of arrow Ⓐ.

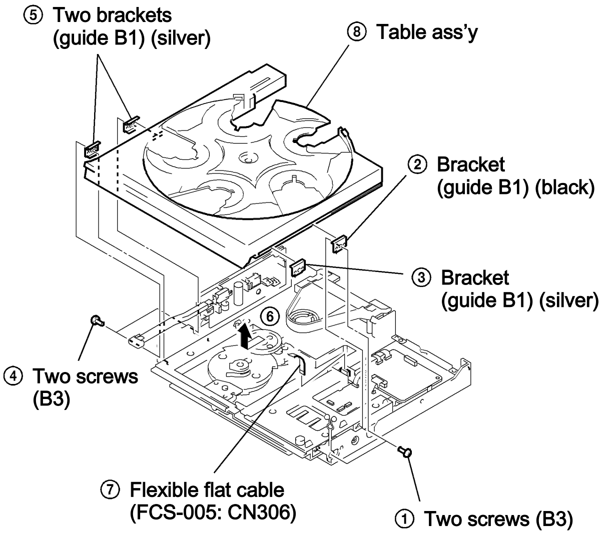
2-5. AV-57 BOARD REMOVAL


③ AV-57 board
② Six screws (B3)
① Flexible flat cable (FAE-006: CN101) (AEP, UK)

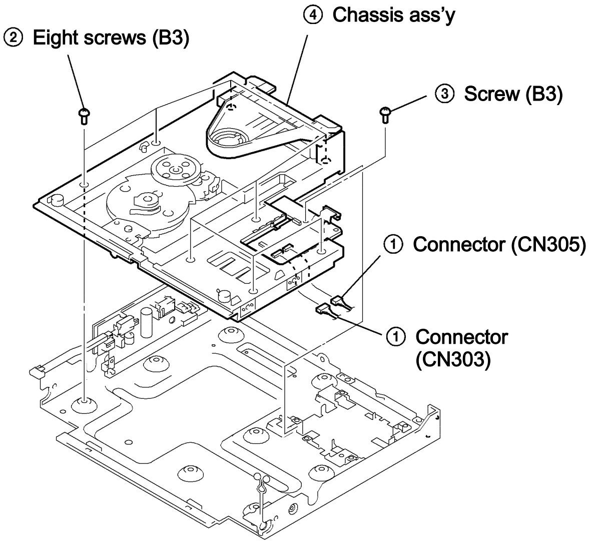
2-6. ER-16 BOARD REMOVAL (AEP, UK)


① Two screws (B3)
② ER-16 board

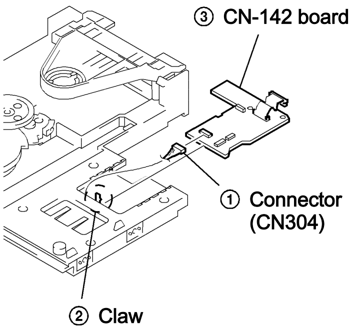
2-7. TABLE ASS'Y REMOVAL


⑤ Two brackets (guide B1) (silver)
⑧ Table ass'y
② Bracket (guide B1) (black)
③ Bracket (guide B1) (silver)
⑥
④ Two screws (B3)
⑦ Flexible flat cable (FCS-005: CN306)
① Two screws (B3)

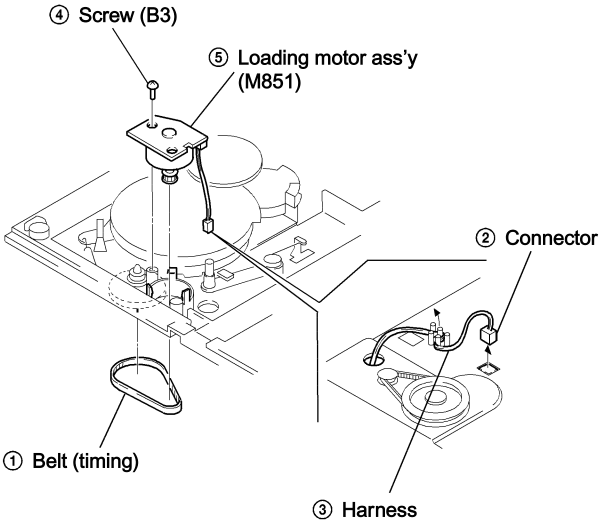
2-8. CHASSIS ASS'Y


④ Chassis ass'y
② Eight screws (B3)
③ Screw (B3)
① Connector (CN305)
① Connector (CN303)

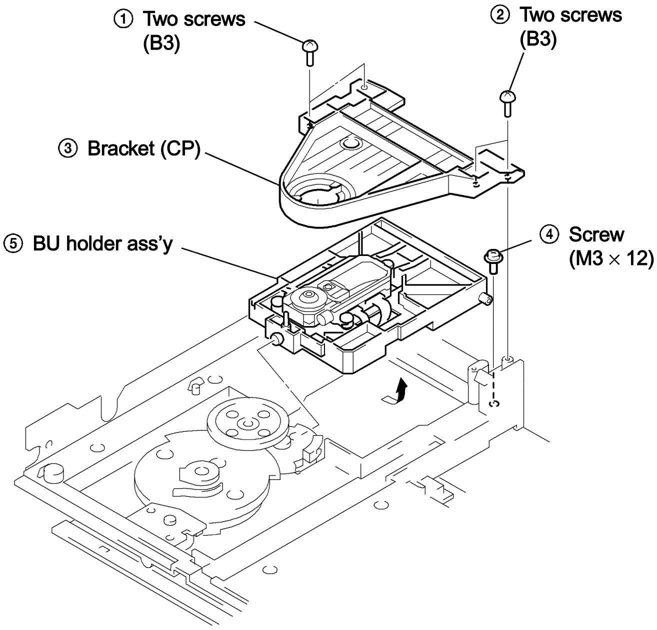
2-9. CN-142 BOARD REMOVAL


③ CN-142 board
① Connector
(CN304)
② Claw

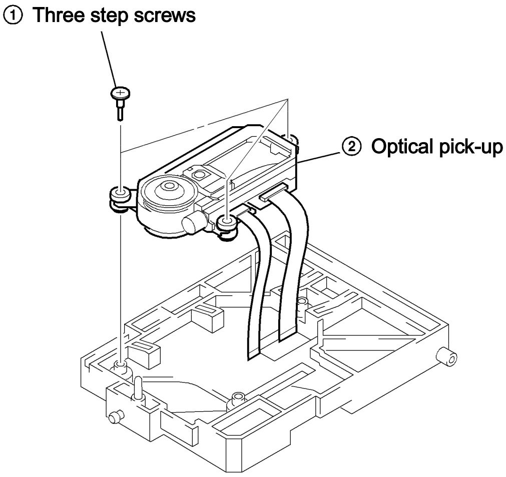
2-10. LOADING MOTOR ASS'Y (M851) REMOVAL


④ Screw (B3)
⑤ Loading motor ass'y
(M851)
② Connector
① Belt (timing)
③ Harness

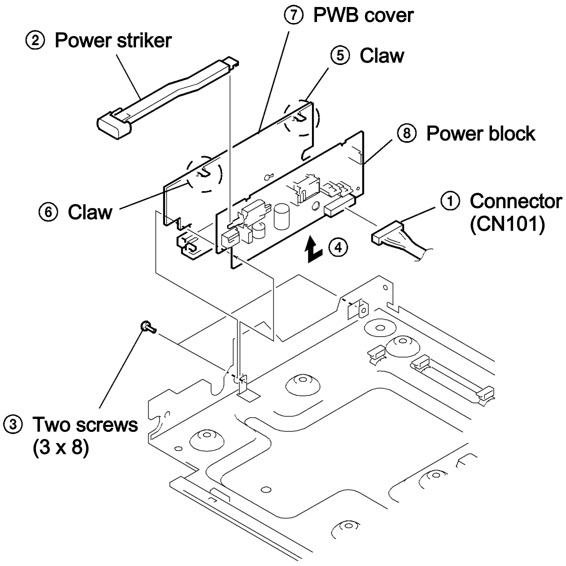
2-11. BU HOLDER ASS'Y REMOVAL


① Two screws
(B3)
② Two screws
(B3)
③ Bracket (CP)
④ Screw
(M3 × 12)
⑤ BU holder ass'y

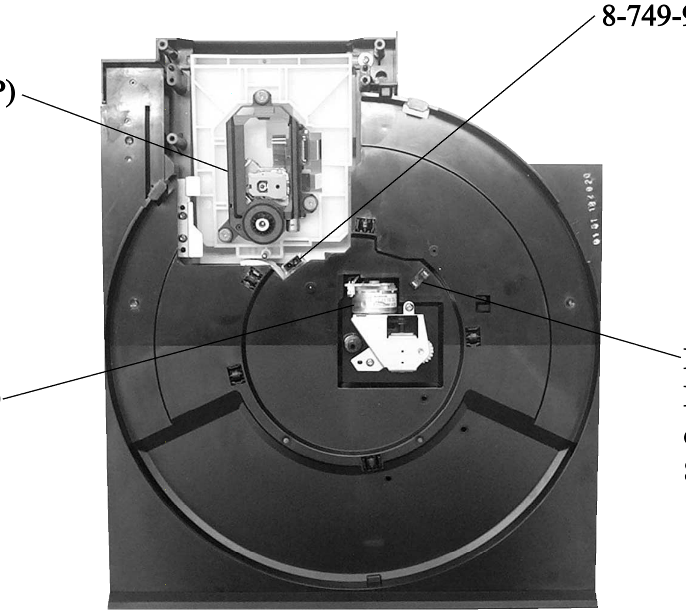
2-12. OPTICAL PICK-UP REMOVAL

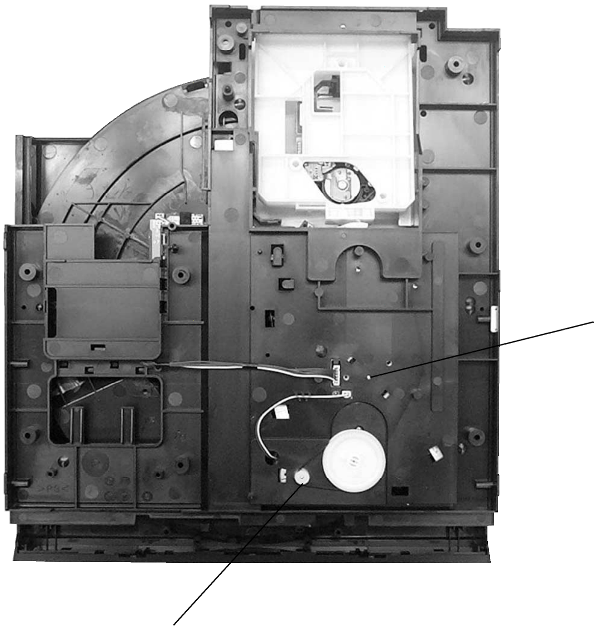

① Three step screws
② Optical pick-up

2-13. POWER BLOCK REMOVAL

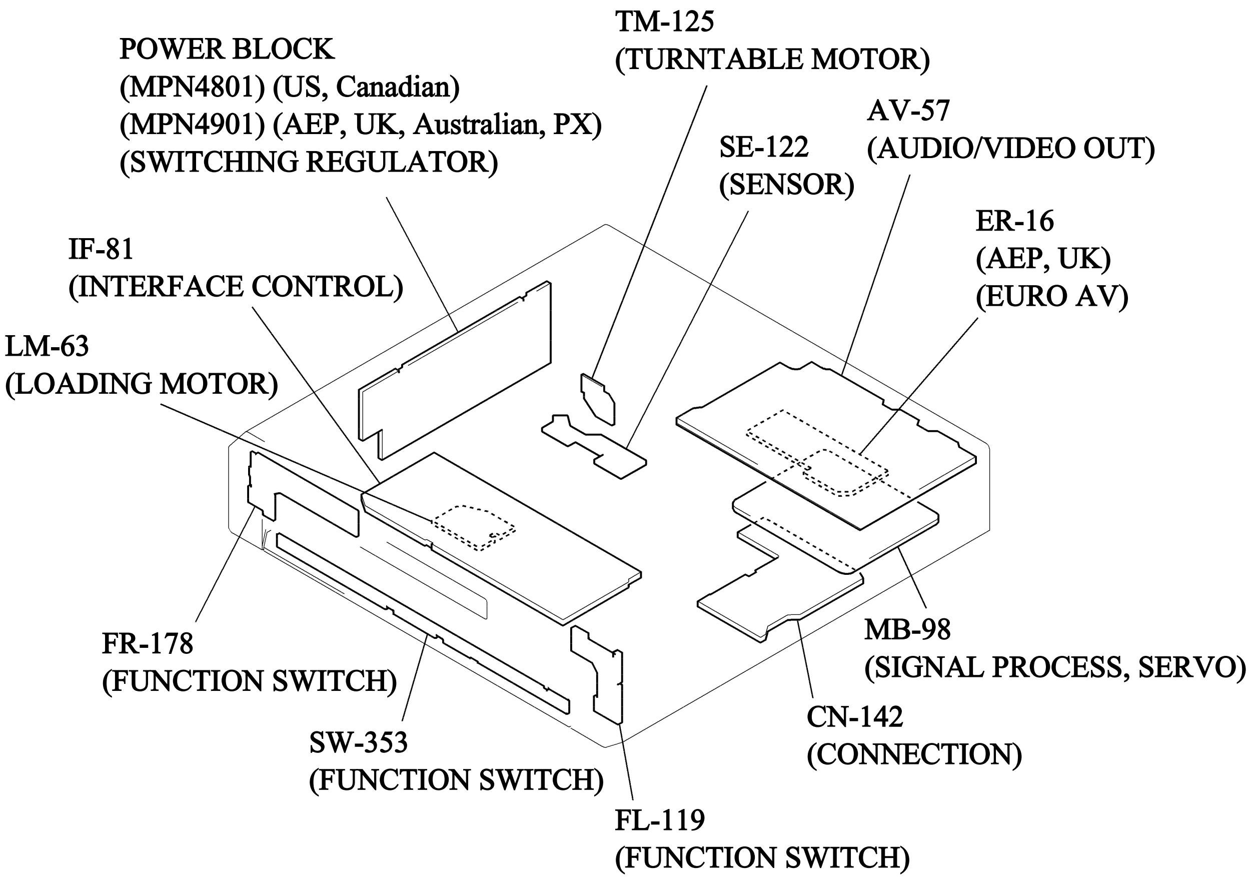

⑦ PWB cover
② Power striker
⑤ Claw
⑧ Power block
⑥ Claw
① Connector
(CN101)
④
③ Two screws
(3 x 8)

2-14. INTERNAL VIEWS


PH501
Disc presence detection sensor
8-749-924-30
Optical pick-up
(KHM-240 AAA/J1RP)
8-820-144-06
M951
DC motor (turn table)
1-541-632-11
PH502
Roulette position
detection sensor
8-749-924-18

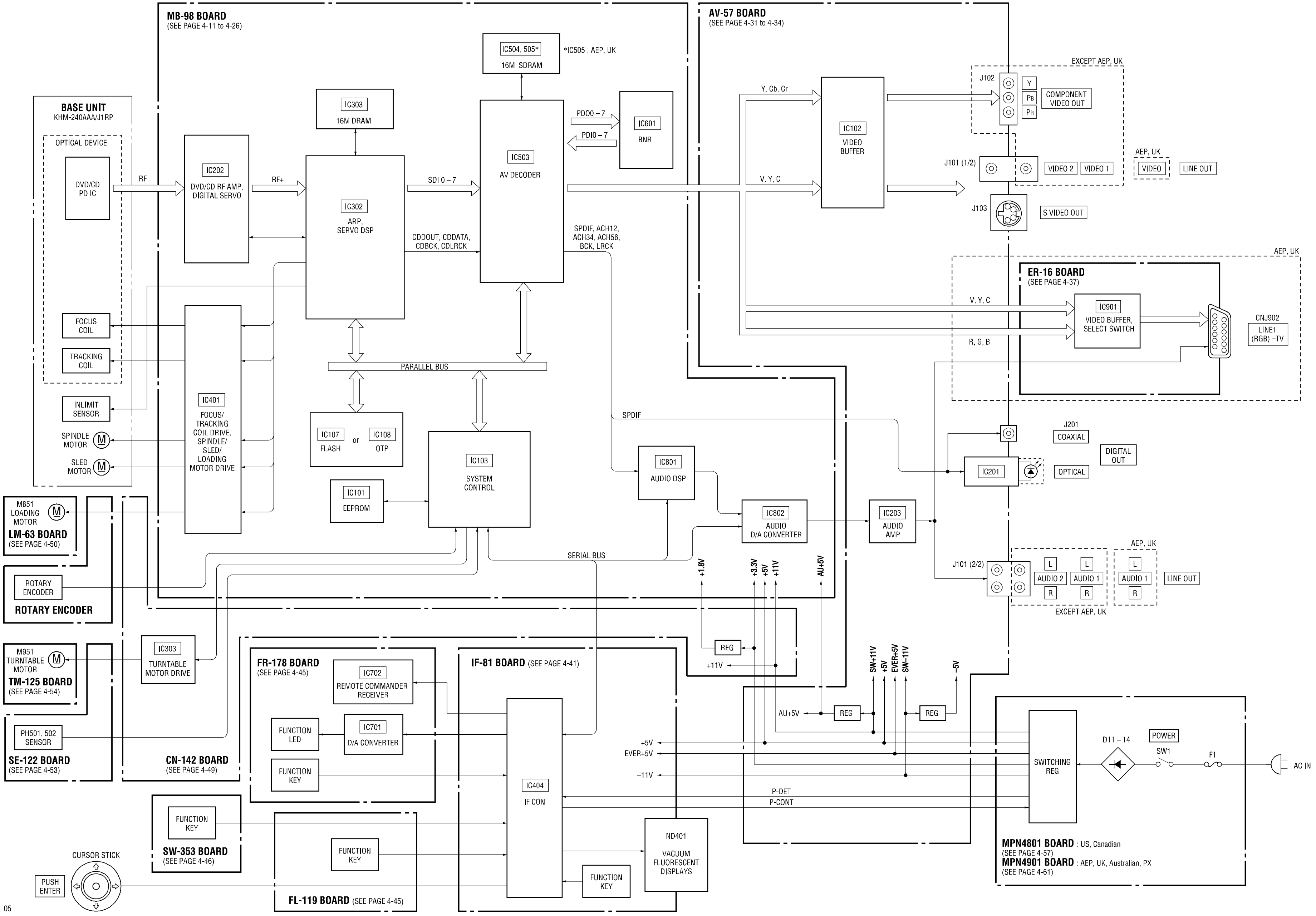

Rotary encoder
(loading)
1-466-996-21
M851
Loading motor ass’y
A-4660-977-A

2-15. CIRCUIT BOARDS LOCATION

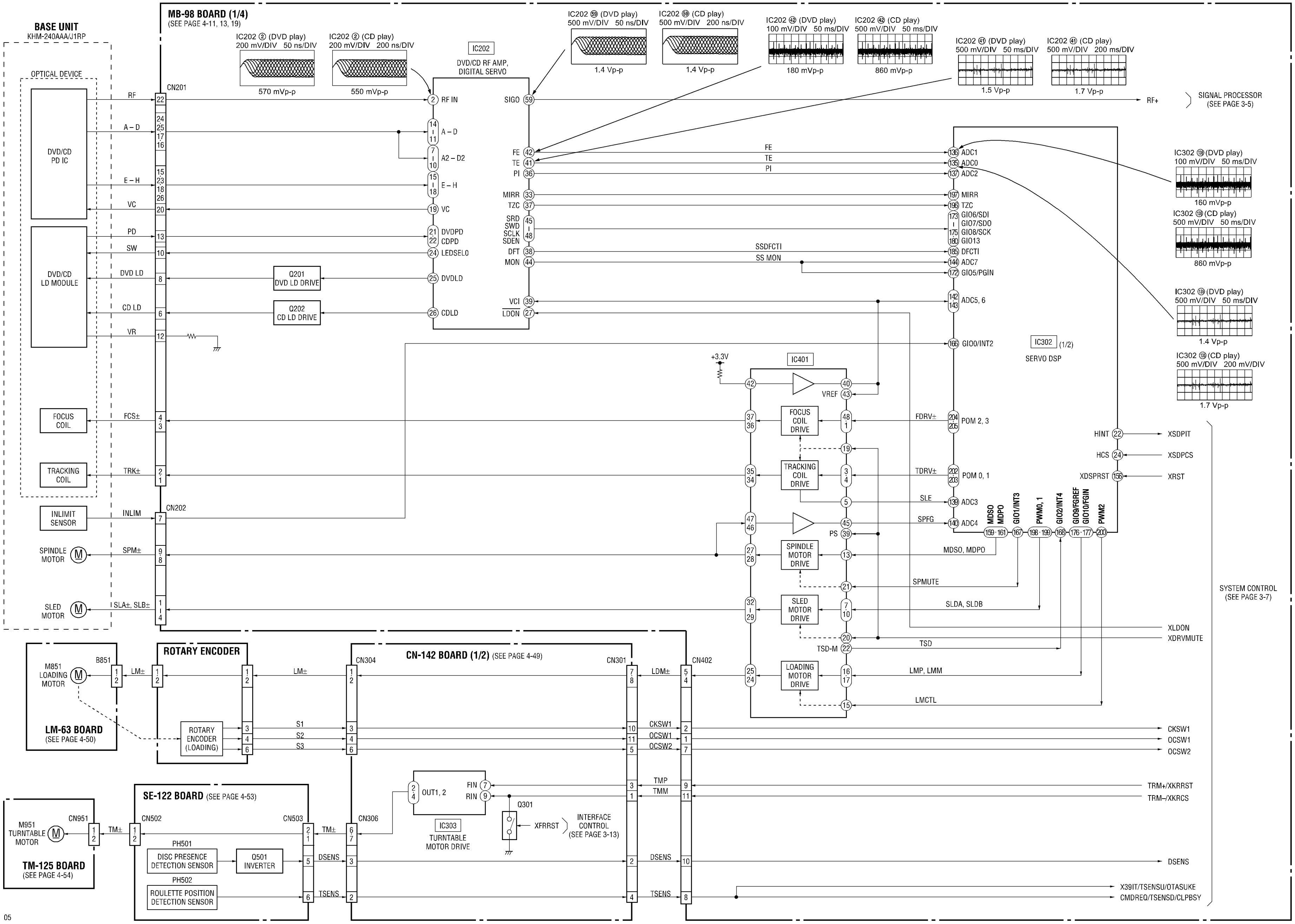

POWER BLOCK
(MPN4801) (US, Canadian)
(MPN4901) (AEP, UK, Australian, PX)
(SWITCHING REGULATOR)
TM-125
(TURNTABLE MOTOR)
SE-122
(SENSOR)
AV-57
(AUDIO/VIDEO OUT)
ER-16
(AEP, UK)
(EURO AV)
IF-81
(INTERFACE CONTROL)
LM-63
(LOADING MOTOR)
FR-178
(FUNCTION SWITCH)
SW-353
(FUNCTION SWITCH)
FL-119
(FUNCTION SWITCH)
CN-142
(CONNECTION)
MB-98
(SIGNAL PROCESS, SERVO)

SECTION 3
BLOCK DIAGRAMS

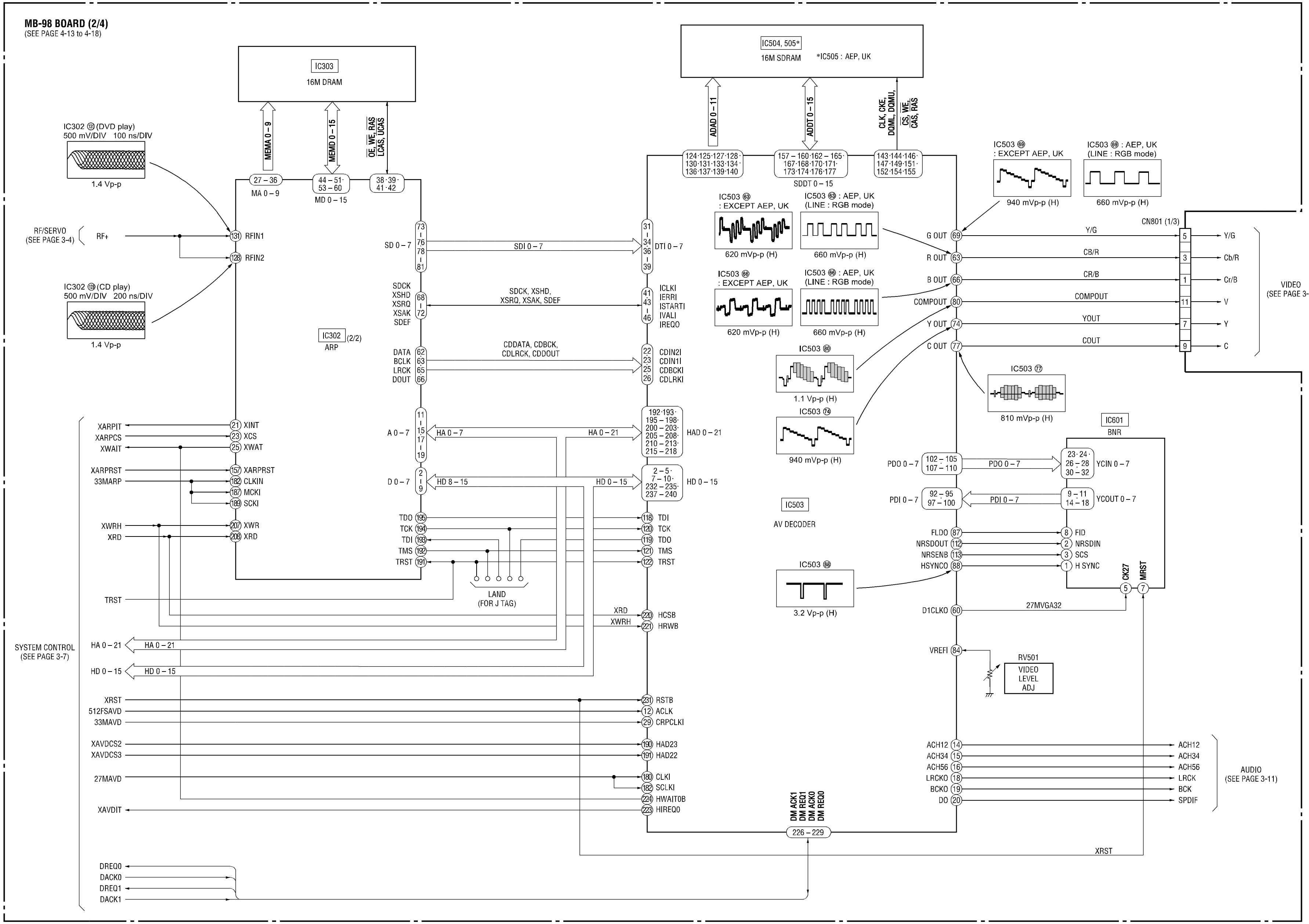
3-1. OVERALL BLOCK DIAGRAM


MB-98 BOARD
(SEE PAGE 4-11 to 4-26)
AV-57 BOARD
(SEE PAGE 4-31 to 4-34)
BASE UNIT
KHM-240AAA/J1RP
OPTICAL DEVICE
DVD/CD PD IC
FOCUS COIL
TRACKING COIL
INLIMIT SENSOR
SPINDLE MOTOR
SLED MOTOR
RF
IC202
DVD/CD RF AMP, DIGITAL SERVO
RF+
IC303
16M DRAM
IC302
ARP, SERVO DSP
IC504, 505*
16M SDRAM
*IC505 : AEP, UK
IC503
AV DECODER
PDO0 – 7
PDI0 – 7
IC601
BNR
SDI 0 – 7
CDDOUT, CDDATA, CDBCK, CDLRCK
SPDIF, ACH12, ACH34, ACH56, BCK, LRCK
PARALLEL BUS
IC401
FOCUS/ TRACKING COIL DRIVE, SPINDLE/ SLED/ LOADING MOTOR DRIVE
IC107
FLASH
or
IC108
OTP
IC103
SYSTEM CONTROL
IC101
EEPROM
SERIAL BUS
SPDIF
IC801
AUDIO DSP
IC802
AUDIO D/A CONVERTER
IC203
AUDIO AMP
Y, Cb, Cr
V, Y, C
IC102
VIDEO BUFFER
EXCEPT AEP, UK
J102
Y
PB
PR
COMPONENT VIDEO OUT
J101 (1/2)
VIDEO 2
VIDEO 1
AEP, UK
VIDEO
LINE OUT
J103
S VIDEO OUT
AEP, UK
ER-16 BOARD
(SEE PAGE 4-37)
V, Y, C
R, G, B
IC901
VIDEO BUFFER, SELECT SWITCH
CNJ902
LINE1 (RGB) –TV
J201
COAXIAL
DIGITAL OUT
IC201
OPTICAL
J101 (2/2)
L
R
AUDIO 2
AUDIO 1
EXCEPT AEP, UK
AEP, UK
AUDIO 1
LINE OUT
+1.8V
+3.3V
+5V
+11V
AU+5V
REG
+11V
SW+11V
+5V
EVER+5V
SW–11V
–5V
AU+5V
REG
REG
M851
LOADING MOTOR
LM-63 BOARD
(SEE PAGE 4-50)
ROTARY ENCODER
ROTARY ENCODER
M951
TURNTABLE MOTOR
TM-125 BOARD
(SEE PAGE 4-54)
IC303
TURNTABLE MOTOR DRIVE
PH501, 502
SENSOR
SE-122 BOARD
(SEE PAGE 4-53)
CN-142 BOARD
(SEE PAGE 4-49)
FR-178 BOARD
(SEE PAGE 4-45)
IC702
REMOTE COMMANDER RECEIVER
FUNCTION LED
IC701
D/A CONVERTER
FUNCTION KEY
IF-81 BOARD (SEE PAGE 4-41)
IC404
IF CON
+5V
EVER+5V
–11V
P-DET
P-CONT
ND401
VACUUM FLUORESCENT DISPLAYS
FUNCTION KEY
FUNCTION KEY
SW-353 BOARD
(SEE PAGE 4-46)
FUNCTION KEY
FL-119 BOARD (SEE PAGE 4-45)
CURSOR STICK
PUSH ENTER
05
SWITCHING REG
D11 – 14
POWER
SW1
F1
AC IN
MPN4801 BOARD : US, Canadian
(SEE PAGE 4-57)
MPN4901 BOARD : AEP, UK, Australian, PX
(SEE PAGE 4-61)

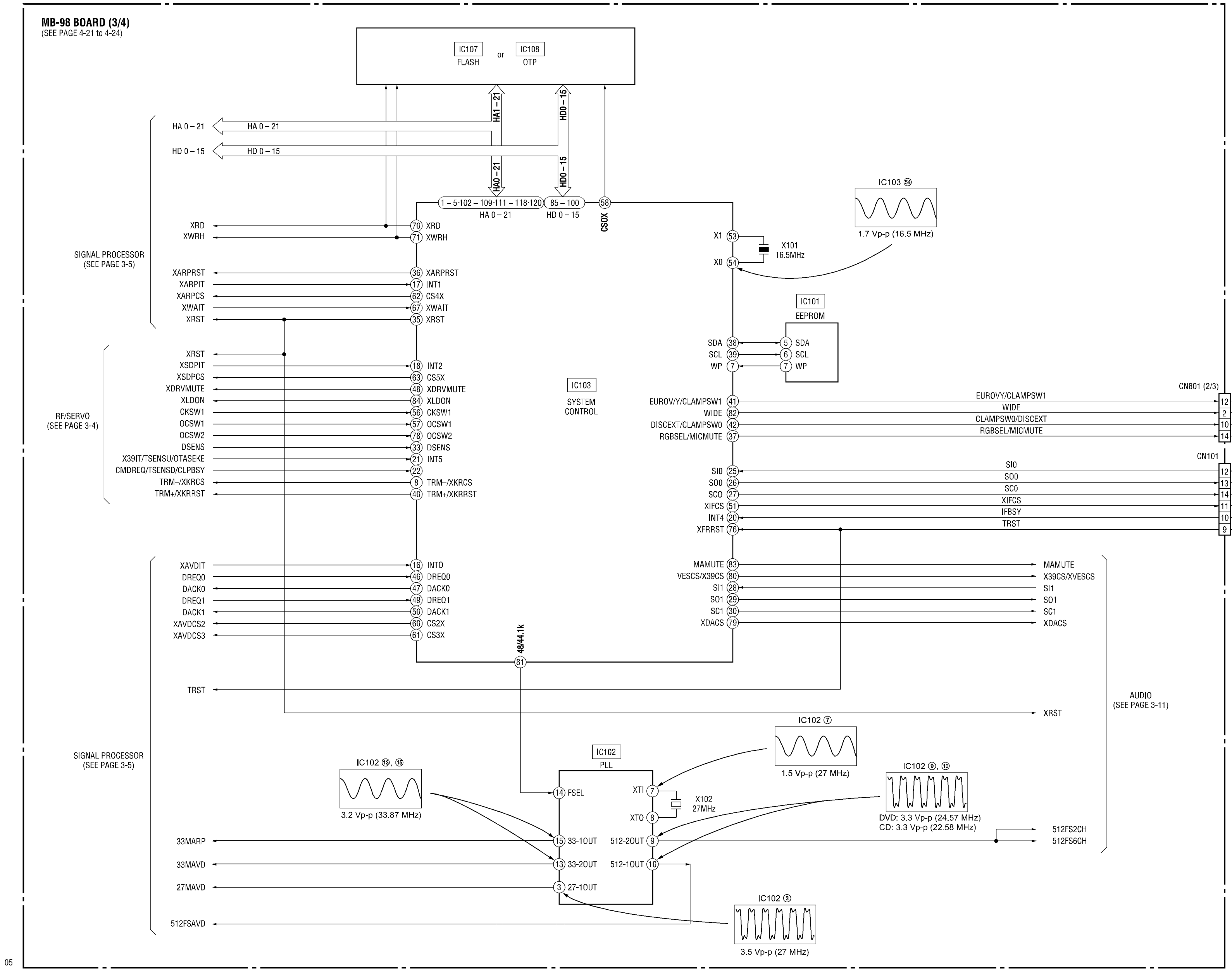
3-2. RF/SERVO BLOCK DIAGRAM


BASE UNIT
KHM-240AAA/J1RP
OPTICAL DEVICE
DVD/CD PD IC
DVD/CD LD MODULE
FOCUS COIL
TRACKING COIL
INLIMIT SENSOR
SPINDLE MOTOR
SLED MOTOR
RF
A – D
E – H
VC
PD
SW
DVD LD
CD LD
VR
FCS±
TRK±
INLIM
SPM±
SLA±, SLB±
MB-98 BOARD (1/4)
(SEE PAGE 4-11, 13, 19)
CN201
CN202
Q201 DVD LD DRIVE
Q202 CD LD DRIVE
IC202 ② (DVD play) 200 mV/DIV 50 ns/DIV 570 mVp-p
IC202 ② (CD play) 200 mV/DIV 200 ns/DIV 550 mVp-p
IC202
DVD/CD RF AMP, DIGITAL SERVO
RF IN
A – D
A2 – D2
E – H
VC
DVDPD
CDPD
LEDSEL0
DVDLD
CDLD
SIGO
FE
TE
PI
MIRR
TZC
SRD
SWD
SCLK
SDEN
DFT
MON
VCI
LDON
IC202 (59) (DVD play) 500 mV/DIV 50 ns/DIV 1.4 Vp-p
IC202 (59) (CD play) 500 mV/DIV 200 ns/DIV 1.4 Vp-p
IC202 ㊷ (DVD play) 100 mV/DIV 50 ms/DIV 180 mVp-p
IC202 ㊷ (CD play) 500 mV/DIV 50 ms/DIV 860 mVp-p
IC202 ㊶ (DVD play) 500 mV/DIV 50 ms/DIV 1.5 Vp-p
IC202 ㊶ (CD play) 500 mV/DIV 200 ms/DIV 1.7 Vp-p
RF+
SIGNAL PROCESSOR (SEE PAGE 3-5)
SSDFCTI
SS MON
ADC1
ADC0
ADC2
MIRR
TZC
GIO6/SDI
GIO7/SDO
GIO8/SCK
GIO13
DFCTI
ADC7
GIO5/PGIN
ADC5, 6
GIO0/INT2
IC302 (1/2)
SERVO DSP
IC302 (136) (DVD play) 100 mV/DIV 50 ms/DIV 160 mVp-p
IC302 (136) (CD play) 500 mV/DIV 50 ms/DIV 860 mVp-p
IC302 (135) (DVD play) 500 mV/DIV 50 ms/DIV 1.4 Vp-p
IC302 (135) (CD play) 500 mV/DIV 200 mV/DIV 1.7 Vp-p
+3.3V
IC401
VREF
FOCUS COIL DRIVE
TRACKING COIL DRIVE
SPINDLE MOTOR DRIVE
SLED MOTOR DRIVE
LOADING MOTOR DRIVE
PS
TSD-M
FDRV±
TDRV±
SLE
SPFG
POM 2, 3
POM 0, 1
ADC3
ADC4
MDSO
MDPO
GIO1/INT3
PWM0, 1
GIO2/INT4
GIO9/FGREF
GIO10/FGIN
PWM2
MDSO, MDPO
SPMUTE
SLDA, SLDB
TSD
LMP, LMM
LMCTL
HINT
HCS
XDSPRST
XSDPIT
XSDPCS
XRST
SYSTEM CONTROL (SEE PAGE 3-7)
XLDON
XDRVMUTE
CN402
M851 LOADING MOTOR
B851
LM±
LM-63 BOARD (SEE PAGE 4-50)
ROTARY ENCODER
ROTARY ENCODER (LOADING)
S1
S2
S3
CN-142 BOARD (1/2) (SEE PAGE 4-49)
CN304
CN301
LDM±
CKSW1
OCSW1
OCSW2
TMP
TMM
OUT1, 2
FIN
RIN
IC303
TURNTABLE MOTOR DRIVE
Q301
XFRRST
INTERFACE CONTROL (SEE PAGE 3-13)
CN306
DSENS
TSENS
TRM+/XKRRST
TRM–/XKRCS
X39IT/TSENSU/OTASUKE
CMDREQ/TSENSD/CLPBSY
M951 TURNTABLE MOTOR
CN951
TM±
TM-125 BOARD (SEE PAGE 4-54)
SE-122 BOARD (SEE PAGE 4-53)
CN502
CN503
PH501
DISC PRESENCE DETECTION SENSOR
Q501 INVERTER
PH502
ROULETTE POSITION DETECTION SENSOR
05

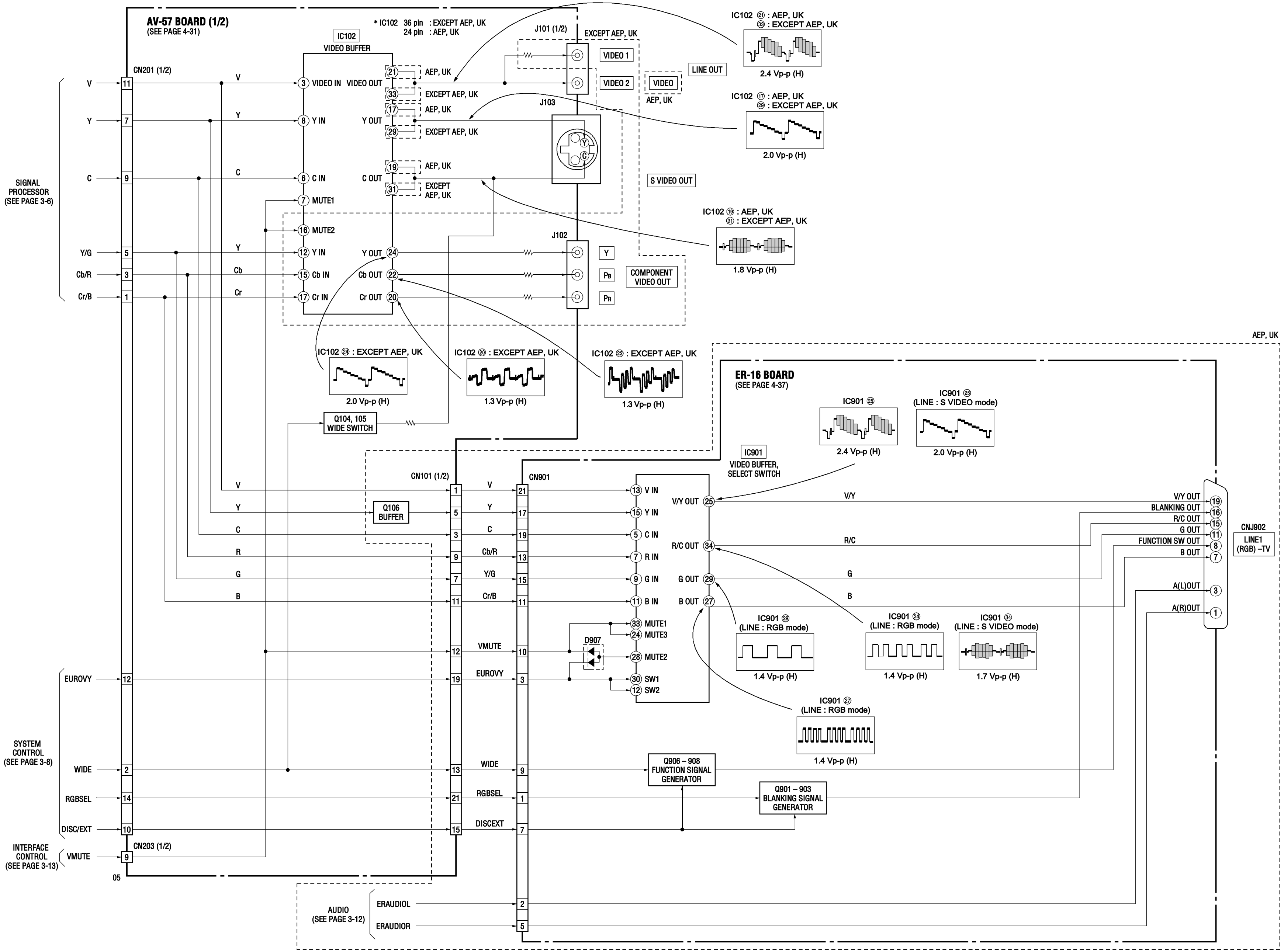
3-3. SIGNAL PROCESSOR BLOCK DIAGRAM


MB-98 BOARD (2/4)
(SEE PAGE 4-13 to 4-18)
IC303
16M DRAM
MEMA 0 – 9
MEMD 0 – 15
OE, WE, RAS
LCAS, UCAS
27 – 36
MA 0 – 9
44 – 51·
53 – 60
MD 0 – 15
38·39·
41·42
IC504, 505*
16M SDRAM
*IC505 : AEP, UK
ADAD 0 – 11
ADDT 0 – 15
CLK, CKE,
DQML, DQMU,
CS, WE,
CAS, RAS
124·125·127·128·
130·131·133·134·
136·137·139·140
157 – 160·162 – 165·
167·168·170·171·
173·174·176·177
SDDT 0 – 15
143·144·146·
147·149·151·
152·154·155
IC302 (131) (DVD play)
500 mV/DIV 100 ns/DIV
1.4 Vp-p
RF/SERVO
(SEE PAGE 3-4)
RF+
RFIN1
RFIN2
IC302 (128) (CD play)
500 mV/DIV 200 ns/DIV
1.4 Vp-p
IC302 (2/2)
ARP
SD 0 – 7
SDI 0 – 7
DTI 0 – 7
SDCK
XSHD
XSRQ
XSAK
SDEF
SDCK, XSHD,
XSRQ, XSAK, SDEF
ICLKI
IERRI
ISTARTI
IVALI
IREQO
DATA
BCLK
LRCK
DOUT
CDDATA, CDBCK,
CDLRCK, CDDOUT
CDIN2I
CDIN1I
CDBCKI
CDLRKI
XARPIT
XARPCS
XWAIT
XINT
XCS
XWAT
XARPRST
33MARP
XARPRST
CLKIN
MCKI
SCKI
XWRH
XRD
XWR
XRD
A 0 – 7
HA 0 – 7
HA 0 – 21
HAD 0 – 21
D 0 – 7
HD 8 – 15
HD 0 – 15
HD 0 – 15
TDO
TCK
TDI
TMS
TRST
TDI
TCK
TDO
TMS
TRST
LAND
(FOR J TAG)
TRST
XRD
XWRH
HCSB
HRWB
SYSTEM CONTROL
(SEE PAGE 3-7)
HA 0 – 21
HA 0 – 21
HD 0 – 15
HD 0 – 15
XRST
512FSAVD
33MAVD
RSTB
ACLK
CRPCLKI
XAVDCS2
XAVDCS3
HAD23
HAD22
27MAVD
CLKI
SCLKI
HWAIT0B
XAVDIT
HIREQ0
DREQ0
DACK0
DREQ1
DACK1
DM ACK1
DM REQ1
DM ACK0
DM REQ0
226 – 229
XRST
IC503 (63)
: EXCEPT AEP, UK
620 mVp-p (H)
IC503 (63) : AEP, UK
(LINE : RGB mode)
660 mVp-p (H)
IC503 (66)
: EXCEPT AEP, UK
620 mVp-p (H)
IC503 (66) : AEP, UK
(LINE : RGB mode)
660 mVp-p (H)
IC503 (69)
: EXCEPT AEP, UK
940 mVp-p (H)
IC503 (69) : AEP, UK
(LINE : RGB mode)
660 mVp-p (H)
IC503 (80)
1.1 Vp-p (H)
IC503 (74)
940 mVp-p (H)
IC503 (77)
810 mVp-p (H)
IC503 (88)
3.2 Vp-p (H)
G OUT
R OUT
B OUT
COMPOUT
Y OUT
C OUT
Y/G
CB/R
CR/B
COMPOUT
YOUT
COUT
CN801 (1/3)
Y/G
Cb/R
Cr/B
V
Y
C
VIDEO
(SEE PAGE 3-9)
IC601
BNR
PDO 0 – 7
102 – 105
107 – 110
PDO 0 – 7
23·24·
26 – 28
30 – 32
YCIN 0 – 7
PDI 0 – 7
92 – 95
97 – 100
PDI 0 – 7
9 – 11
14 – 18
YCOUT 0 – 7
IC503
AV DECODER
FLDO
NRSDOUT
NRSENB
HSYNCO
FID
NRSDIN
SCS
H SYNC
CK27
MRST
D1CLKO
27MVGA32
VREFI
RV501
VIDEO
LEVEL
ADJ
ACH12
ACH34
ACH56
LRCKO
BCKO
DO
ACH12
ACH34
ACH56
LRCK
BCK
SPDIF
AUDIO
(SEE PAGE 3-11)
05

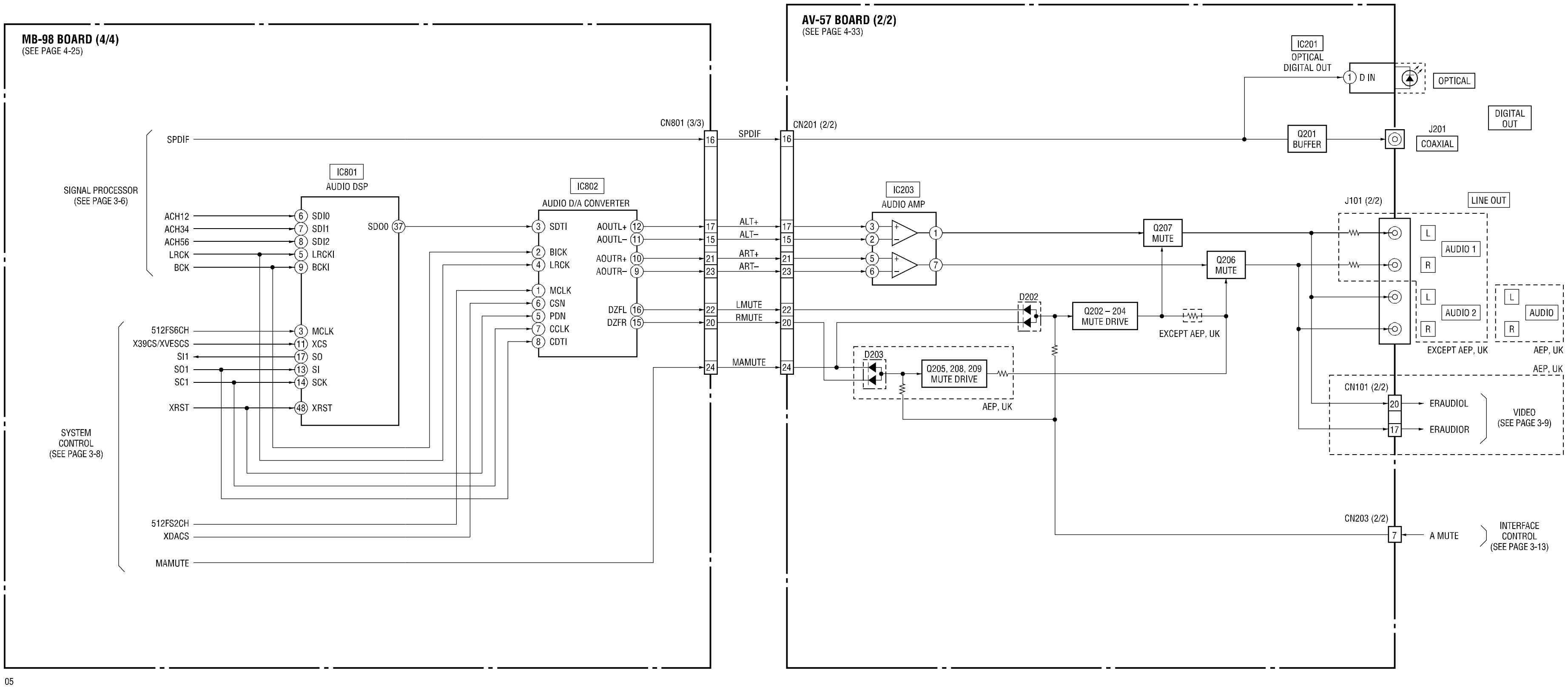
3-4. SYSTEM CONTROL BLOCK DIAGRAM


MB-98 BOARD (3/4)
(SEE PAGE 4-21 to 4-24)
IC107
FLASH
or
IC108
OTP
HA1 – 21
HD0 – 15
HA 0 – 21
HD 0 – 15
HA0 – 21
HD0 – 15
1 – 5·102 – 109·111 – 118·120
HA 0 – 21
85 – 100
HD 0 – 15
58
CSOX
IC103 54
1.7 Vp-p (16.5 MHz)
X1 53
X0 54
X101
16.5MHz
SIGNAL PROCESSOR
(SEE PAGE 3-5)
XRD
XWRH
70 XRD
71 XWRH
XARPRST
XARPIT
XARPCS
XWAIT
XRST
36 XARPRST
17 INT1
62 CS4X
67 XWAIT
35 XRST
IC101
EEPROM
SDA 38
SCL 39
WP 7
5 SDA
6 SCL
7 WP
RF/SERVO
(SEE PAGE 3-4)
XRST
XSDPIT
XSDPCS
XDRVMUTE
XLDON
CKSW1
OCSW1
OCSW2
DSENS
X39IT/TSENSU/OTASEKE
CMDREQ/TSENSD/CLPBSY
TRM–/XKRCS
TRM+/XKRRST
18 INT2
63 CS5X
48 XDRVMUTE
84 XLDON
56 CKSW1
57 OCSW1
78 OCSW2
33 DSENS
21 INT5
22
8 TRM–/XKRCS
40 TRM+/XKRRST
IC103
SYSTEM
CONTROL
CN801 (2/3)
EUROV/Y/CLAMPSW1 41
WIDE 82
DISCEXT/CLAMPSW0 42
RGBSEL/MICMUTE 37
EUROVY/CLAMPSW1
WIDE
CLAMPSW0/DISCEXT
RGBSEL/MICMUTE
12
2
10
14
EUROVY
WIDE
DISC/EXT
RGBSEL
VIDEO
(SEE PAGE 3-9)
CN101
SI0 25
SO0 26
SC0 27
XIFCS 51
INT4 20
XFRRST 76
SI0
SO0
SC0
XIFCS
IFBSY
TRST
12
13
14
11
10
9
SI0
SO0
SC0
XIFCS
XIFBUSY
XFRRST
INTERFACE
CONTROL
(SEE PAGE 3-13)
XAVDIT
DREQ0
DACK0
DREQ1
DACK1
XAVDCS2
XAVDCS3
16 INT0
46 DREQ0
47 DACK0
49 DREQ1
50 DACK1
60 CS2X
61 CS3X
MAMUTE 83
VESCS/X39CS 80
SI1 28
SO1 29
SC1 30
XDACS 79
MAMUTE
X39CS/XVESCS
SI1
SO1
SC1
XDACS
48/44.1k
81
TRST
XRST
AUDIO
(SEE PAGE 3-11)
SIGNAL PROCESSOR
(SEE PAGE 3-5)
IC102 7
1.5 Vp-p (27 MHz)
IC102 13, 15
3.2 Vp-p (33.87 MHz)
IC102
PLL
14 FSEL
XTI 7
XTO 8
X102
27MHz
IC102 9, 10
DVD: 3.3 Vp-p (24.57 MHz)
CD: 3.3 Vp-p (22.58 MHz)
33MARP
33MAVD
27MAVD
512FSAVD
15 33-1OUT
13 33-2OUT
3 27-1OUT
512-2OUT 9
512-1OUT 10
512FS2CH
512FS6CH
IC102 3
3.5 Vp-p (27 MHz)
05

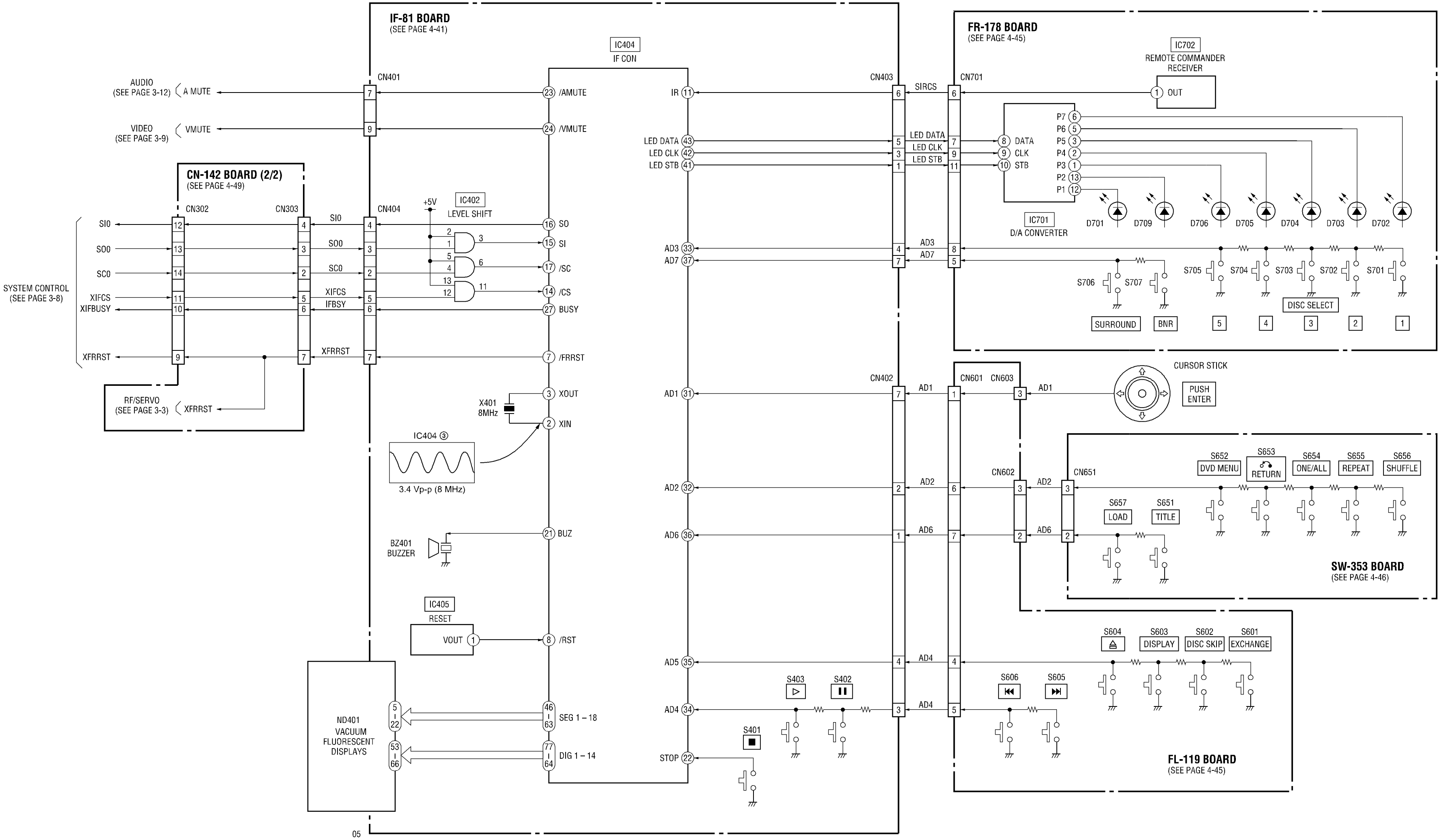
3-5. VIDEO BLOCK DIAGRAM


AV-57 BOARD (1/2)
(SEE PAGE 4-31)
* IC102 36 pin : EXCEPT AEP, UK
24 pin : AEP, UK
IC102
VIDEO BUFFER
J101 (1/2)
EXCEPT AEP, UK
VIDEO 1
VIDEO 2
VIDEO
AEP, UK
LINE OUT
J103
S VIDEO OUT
J102
Y
PB
PR
COMPONENT VIDEO OUT
CN201 (1/2)
SIGNAL PROCESSOR (SEE PAGE 3-6)
V
Y
C
Y/G
Cb/R
Cr/B
VIDEO IN
VIDEO OUT
Y IN
Y OUT
C IN
C OUT
MUTE1
MUTE2
Cb IN
Cb OUT
Cr IN
Cr OUT
AEP, UK
EXCEPT AEP, UK
IC102 ㉑ : AEP, UK
㉝ : EXCEPT AEP, UK
2.4 Vp-p (H)
IC102 ⑰ : AEP, UK
㉙ : EXCEPT AEP, UK
2.0 Vp-p (H)
IC102 ⑲ : AEP, UK
㉛ : EXCEPT AEP, UK
1.8 Vp-p (H)
IC102 ㉔ : EXCEPT AEP, UK
2.0 Vp-p (H)
IC102 ⑳ : EXCEPT AEP, UK
1.3 Vp-p (H)
IC102 ㉒ : EXCEPT AEP, UK
1.3 Vp-p (H)
Q104, 105
WIDE SWITCH
Q106
BUFFER
CN101 (1/2)
CN901
R
G
B
VMUTE
EUROVY
WIDE
RGBSEL
DISCEXT
DISC/EXT
SYSTEM CONTROL (SEE PAGE 3-8)
INTERFACE CONTROL (SEE PAGE 3-13)
CN203 (1/2)
05
AEP, UK
ER-16 BOARD
(SEE PAGE 4-37)
IC901
VIDEO BUFFER, SELECT SWITCH
IC901 ㉕
2.4 Vp-p (H)
IC901 ㉕
(LINE : S VIDEO mode)
2.0 Vp-p (H)
V IN
Y IN
C IN
R IN
G IN
B IN
MUTE1
MUTE3
MUTE2
SW1
SW2
V/Y OUT
R/C OUT
G OUT
B OUT
D907
V/Y
R/C
IC901 ㉙
(LINE : RGB mode)
1.4 Vp-p (H)
IC901 ㉞
(LINE : RGB mode)
1.4 Vp-p (H)
IC901 ㉞
(LINE : S VIDEO mode)
1.7 Vp-p (H)
IC901 ㉗
(LINE : RGB mode)
1.4 Vp-p (H)
Q906 – 908
FUNCTION SIGNAL GENERATOR
Q901 – 903
BLANKING SIGNAL GENERATOR
V/Y OUT
BLANKING OUT
R/C OUT
G OUT
FUNCTION SW OUT
B OUT
A(L)OUT
A(R)OUT
CNJ902
LINE1 (RGB) –TV
AUDIO (SEE PAGE 3-12)
ERAUDIOL
ERAUDIOR

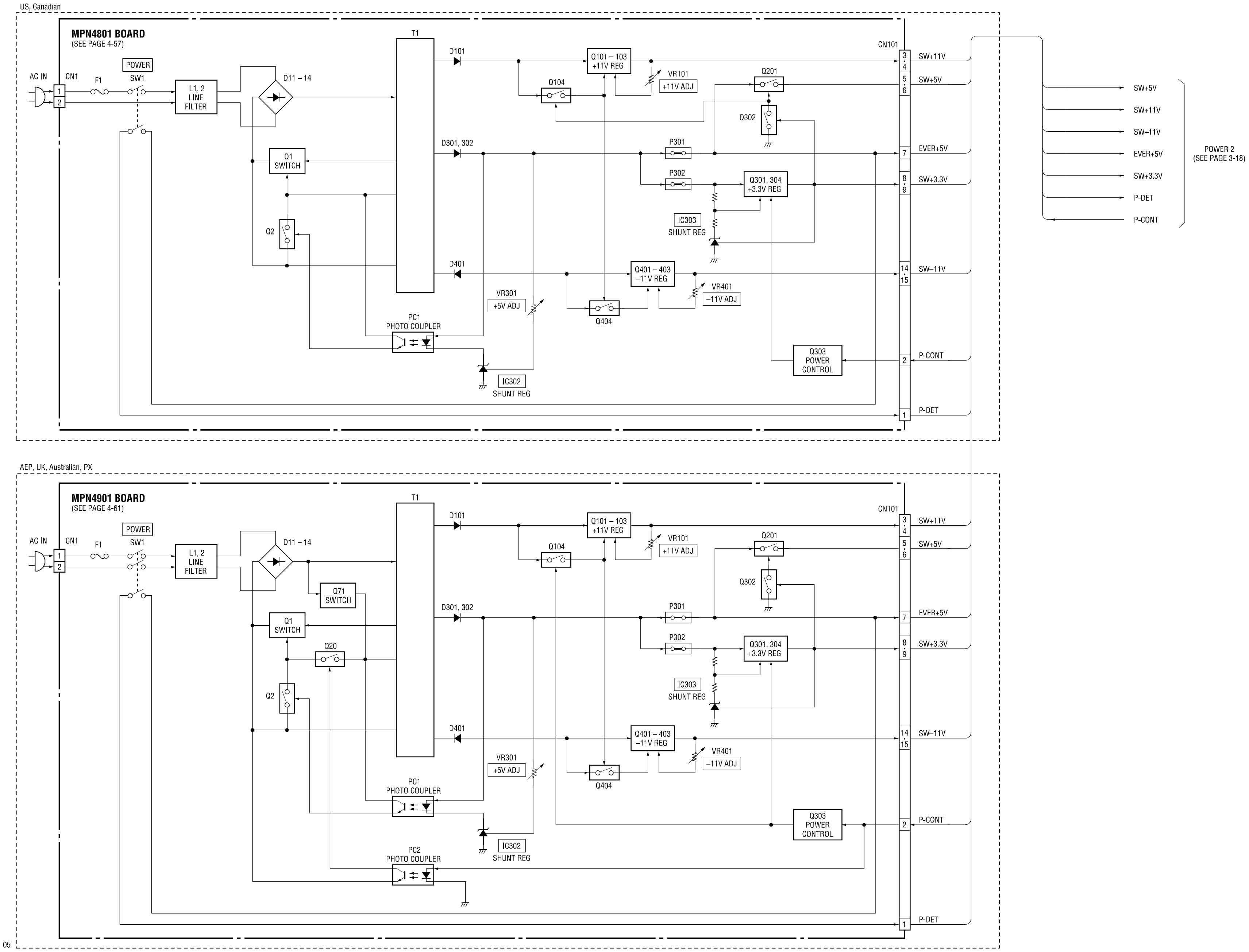
3-6. AUDIO BLOCK DIAGRAM


MB-98 BOARD (4/4)
(SEE PAGE 4-25)
SIGNAL PROCESSOR
(SEE PAGE 3-6)
SPDIF
IC801
AUDIO DSP
ACH12
ACH34
ACH56
LRCK
BCK
6 SDI0
7 SDI1
8 SDI2
5 LRCKI
9 BCKI
SDO0 37
512FS6CH
X39CS/XVESCS
SI1
SO1
SC1
XRST
3 MCLK
11 XCS
17 SO
13 SI
14 SCK
48 XRST
SYSTEM
CONTROL
(SEE PAGE 3-8)
512FS2CH
XDACS
MAMUTE
IC802
AUDIO D/A CONVERTER
3 SDTI
2 BICK
4 LRCK
1 MCLK
6 CSN
5 PDN
7 CCLK
8 CDTI
AOUTL+ 12
AOUTL− 11
AOUTR+ 10
AOUTR− 9
DZFL 16
DZFR 15
CN801 (3/3)
16
17
15
21
23
22
20
24
SPDIF
ALT+
ALT−
ART+
ART−
LMUTE
RMUTE
MAMUTE
05
AV-57 BOARD (2/2)
(SEE PAGE 4-33)
CN201 (2/2)
16
17
15
21
23
22
20
24
IC201
OPTICAL
DIGITAL OUT
1 D IN
OPTICAL
Q201
BUFFER
J201
COAXIAL
DIGITAL
OUT
IC203
AUDIO AMP
3
2
5
6
1
7
Q207
MUTE
Q206
MUTE
D202
Q202 – 204
MUTE DRIVE
EXCEPT AEP, UK
D203
Q205, 208, 209
MUTE DRIVE
AEP, UK
J101 (2/2)
LINE OUT
L
R
AUDIO 1
L
R
AUDIO 2
L
R
AUDIO
EXCEPT AEP, UK
AEP, UK
AEP, UK
CN101 (2/2)
20
17
ERAUDIOL
ERAUDIOR
VIDEO
(SEE PAGE 3-9)
CN203 (2/2)
7
A MUTE
INTERFACE
CONTROL
(SEE PAGE 3-13)

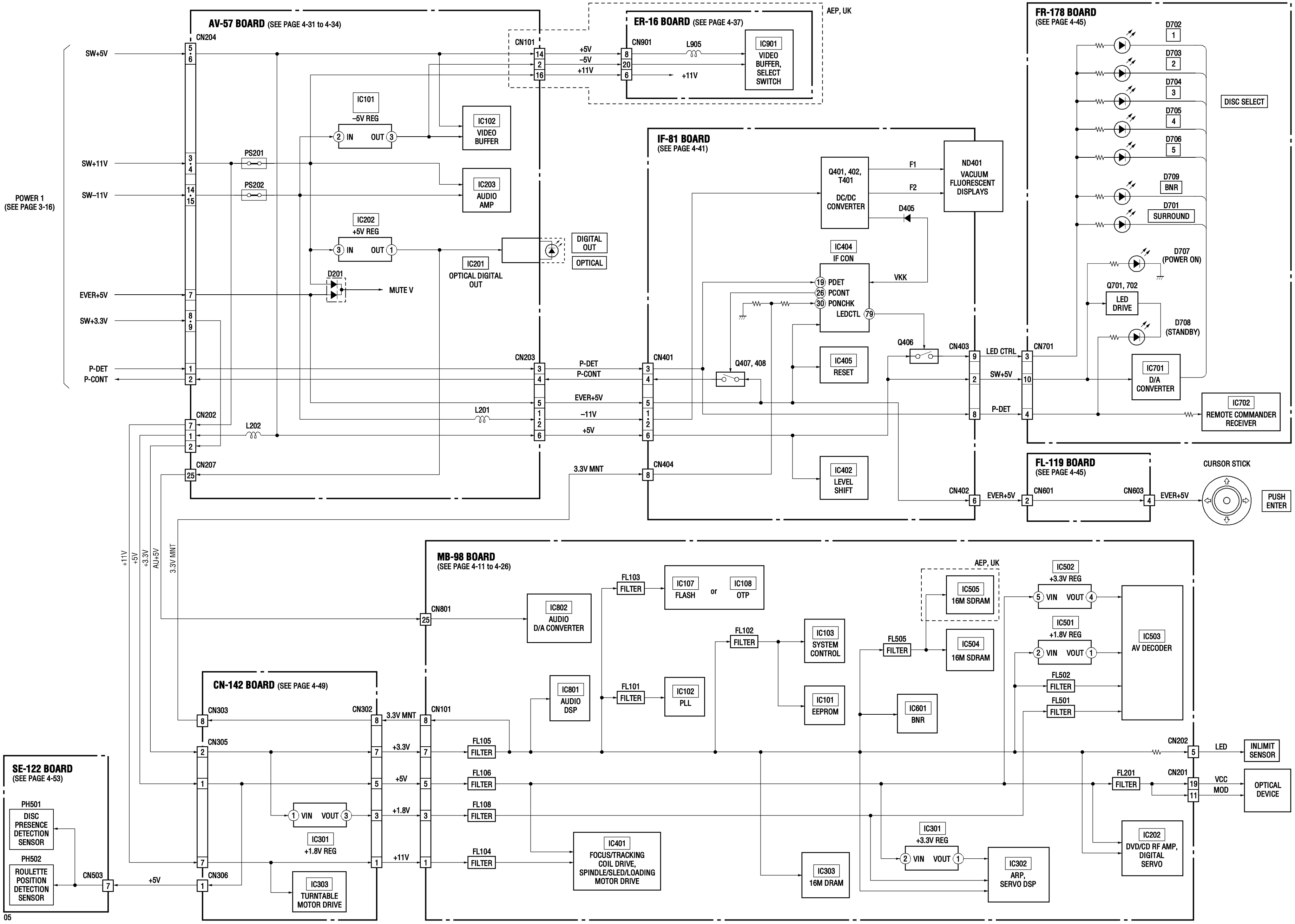
3-7. INTERFACE CONTROL BLOCK DIAGRAM


IF-81 BOARD
(SEE PAGE 4-41)
IC404
IF CON
CN401
CN403
CN404
CN402
AUDIO
(SEE PAGE 3-12)
A MUTE
VIDEO
(SEE PAGE 3-9)
VMUTE
/AMUTE
/VMUTE
IR
LED DATA
LED CLK
LED STB
SIRCS
CN-142 BOARD (2/2)
(SEE PAGE 4-49)
CN302
CN303
SI0
SO0
SC0
XIFCS
XIFBUSY
XFRRST
IFBSY
SYSTEM CONTROL
(SEE PAGE 3-8)
+5V
IC402
LEVEL SHIFT
SO
SI
/SC
/CS
BUSY
/FRRST
AD3
AD7
RF/SERVO
(SEE PAGE 3-3)
X401
8MHz
XOUT
XIN
IC404 ③
3.4 Vp-p (8 MHz)
AD1
AD2
AD6
BZ401
BUZZER
BUZ
IC405
RESET
VOUT
/RST
AD5
AD4
ND401
VACUUM
FLUORESCENT
DISPLAYS
SEG 1 – 18
DIG 1 – 14
STOP
S401
S402
S403
05
FR-178 BOARD
(SEE PAGE 4-45)
IC702
REMOTE COMMANDER
RECEIVER
OUT
CN701
DATA
CLK
STB
P7
P6
P5
P4
P3
P2
P1
IC701
D/A CONVERTER
D701
D709
D706
D705
D704
D703
D702
S706
S707
S705
S704
S703
S702
S701
SURROUND
BNR
DISC SELECT
5
4
3
2
1
CN601
CN603
CN602
CN651
CURSOR STICK
PUSH
ENTER
S652
DVD MENU
S653
RETURN
S654
ONE/ALL
S655
REPEAT
S656
SHUFFLE
S657
LOAD
S651
TITLE
SW-353 BOARD
(SEE PAGE 4-46)
S604
S603
DISPLAY
S602
DISC SKIP
S601
EXCHANGE
S606
S605
FL-119 BOARD
(SEE PAGE 4-45)

3-8. POWER 1 BLOCK DIAGRAM


US, Canadian
MPN4801 BOARD
(SEE PAGE 4-57)
AC IN
CN1
F1
POWER
SW1
L1, 2
LINE
FILTER
D11 – 14
T1
D101
Q101 – 103
+11V REG
VR101
+11V ADJ
Q104
Q201
Q302
CN101
SW+11V
SW+5V
D301, 302
P301
EVER+5V
P302
Q301, 304
+3.3V REG
SW+3.3V
Q1
SWITCH
IC303
SHUNT REG
Q2
D401
Q401 – 403
–11V REG
SW–11V
VR401
–11V ADJ
VR301
+5V ADJ
Q404
PC1
PHOTO COUPLER
Q303
POWER
CONTROL
P-CONT
IC302
SHUNT REG
P-DET
SW+5V
SW+11V
SW–11V
EVER+5V
SW+3.3V
P-DET
P-CONT
POWER 2
(SEE PAGE 3-18)
AEP, UK, Australian, PX
MPN4901 BOARD
(SEE PAGE 4-61)
AC IN
CN1
F1
POWER
SW1
L1, 2
LINE
FILTER
D11 – 14
Q71
SWITCH
T1
D101
Q101 – 103
+11V REG
VR101
+11V ADJ
Q104
Q201
Q302
CN101
SW+11V
SW+5V
D301, 302
P301
EVER+5V
P302
Q301, 304
+3.3V REG
SW+3.3V
Q1
SWITCH
Q20
IC303
SHUNT REG
Q2
D401
Q401 – 403
–11V REG
SW–11V
VR401
–11V ADJ
VR301
+5V ADJ
Q404
PC1
PHOTO COUPLER
Q303
POWER
CONTROL
P-CONT
IC302
SHUNT REG
PC2
PHOTO COUPLER
P-DET
05

3-9. POWER 2 BLOCK DIAGRAM


AV-57 BOARD (SEE PAGE 4-31 to 4-34)
CN204
SW+5V
SW+11V
SW–11V
POWER 1
(SEE PAGE 3-16)
EVER+5V
SW+3.3V
P-DET
P-CONT
PS201
PS202
IC101
–5V REG
IN
OUT
IC102
VIDEO BUFFER
IC203
AUDIO AMP
IC202
+5V REG
D201
MUTE V
IC201
OPTICAL DIGITAL OUT
DIGITAL OUT
OPTICAL
CN101
CN202
L202
CN207
CN203
L201
ER-16 BOARD (SEE PAGE 4-37)
AEP, UK
CN901
L905
IC901
VIDEO BUFFER, SELECT SWITCH
+5V
–5V
+11V
IF-81 BOARD
(SEE PAGE 4-41)
Q401, 402, T401
DC/DC CONVERTER
F1
F2
D405
ND401
VACUUM FLUORESCENT DISPLAYS
IC404
IF CON
PDET
PCONT
PONCHK
LEDCTL
VKK
Q406
Q407, 408
IC405
RESET
IC402
LEVEL SHIFT
CN401
CN403
CN404
CN402
EVER+5V
–11V
3.3V MNT
LED CTRL
SW+5V
FR-178 BOARD
(SEE PAGE 4-45)
D702
D703
D704
D705
D706
D709
BNR
D701
SURROUND
DISC SELECT
D707
(POWER ON)
Q701, 702
LED DRIVE
D708
(STANDBY)
CN701
IC701
D/A CONVERTER
IC702
REMOTE COMMANDER RECEIVER
FL-119 BOARD
(SEE PAGE 4-45)
CN601
CN603
CURSOR STICK
PUSH ENTER
+11V
+5V
+3.3V
AU+5V
3.3V MNT
MB-98 BOARD
(SEE PAGE 4-11 to 4-26)
CN801
IC802
AUDIO D/A CONVERTER
FL103
FILTER
IC107
FLASH
or
IC108
OTP
FL102
IC103
SYSTEM CONTROL
IC101
EEPROM
FL101
IC102
PLL
IC801
AUDIO DSP
IC505
16M SDRAM
FL505
IC504
16M SDRAM
IC601
BNR
IC502
+3.3V REG
VIN
VOUT
IC501
+1.8V REG
FL502
FL501
IC503
AV DECODER
CN101
FL105
FL106
FL108
FL104
IC401
FOCUS/TRACKING COIL DRIVE, SPINDLE/SLED/LOADING MOTOR DRIVE
IC303
16M DRAM
IC301
+3.3V REG
IC302
ARP, SERVO DSP
IC202
DVD/CD RF AMP, DIGITAL SERVO
FL201
CN202
LED
INLIMIT SENSOR
CN201
VCC
MOD
OPTICAL DEVICE
CN-142 BOARD (SEE PAGE 4-49)
CN303
CN302
CN305
CN306
IC301
+1.8V REG
IC303
TURNTABLE MOTOR DRIVE
+3.3V
+1.8V
SE-122 BOARD
(SEE PAGE 4-53)
PH501
DISC PRESENCE DETECTION SENSOR
PH502
ROULETTE POSITION DETECTION SENSOR
CN503
05

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary mote is printed in each block.)

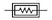
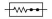
For printed wiring boards:

- ○—— : indicates a lead wire mounted on the component side.
- ●—— : indicates a lead wire mounted on the printed side.
- ○ : Through hole.
- ▒ : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Side A)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side B)	Parts on the parts face side seen from the parts face are indicated.

For schematic diagram:

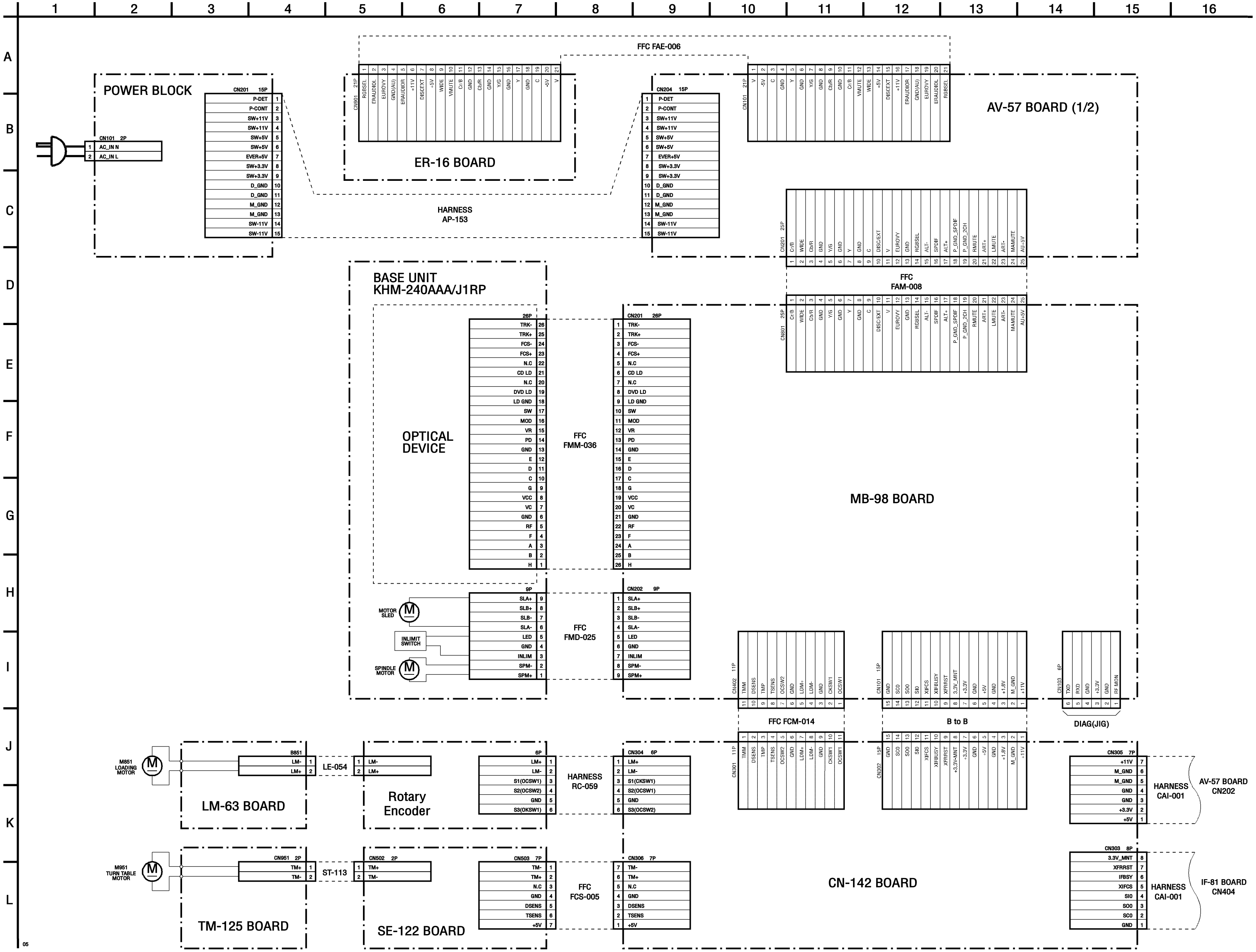
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, $^{1}/_{4}$ W (Chip resistors : $^{1}/_{10}$ W) unless otherwise specified.
  kΩ : 1000Ω, MΩ : 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF 50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
-  : nonflammable resistor.
-  : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repair.
- B + : B+ Line.
- B – : B– Line.
- Circled numbers refer to waveforms.
- Voltages are dc between measurement point.
- Readings are taken with a color-bar signal on DVD reference disc and when playing CD reference disc.
- Readings are taken with a digital multimeter (DC 10MΩ).
- Voltage variations may be noted due to normal production tolerances.

Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Abbreviation
  AUS : Australian
  CND : Canadian

4-1. FRAME SCHEMATIC DIAGRAM
FRAME 1 SCHEMATIC DIAGRAM


1
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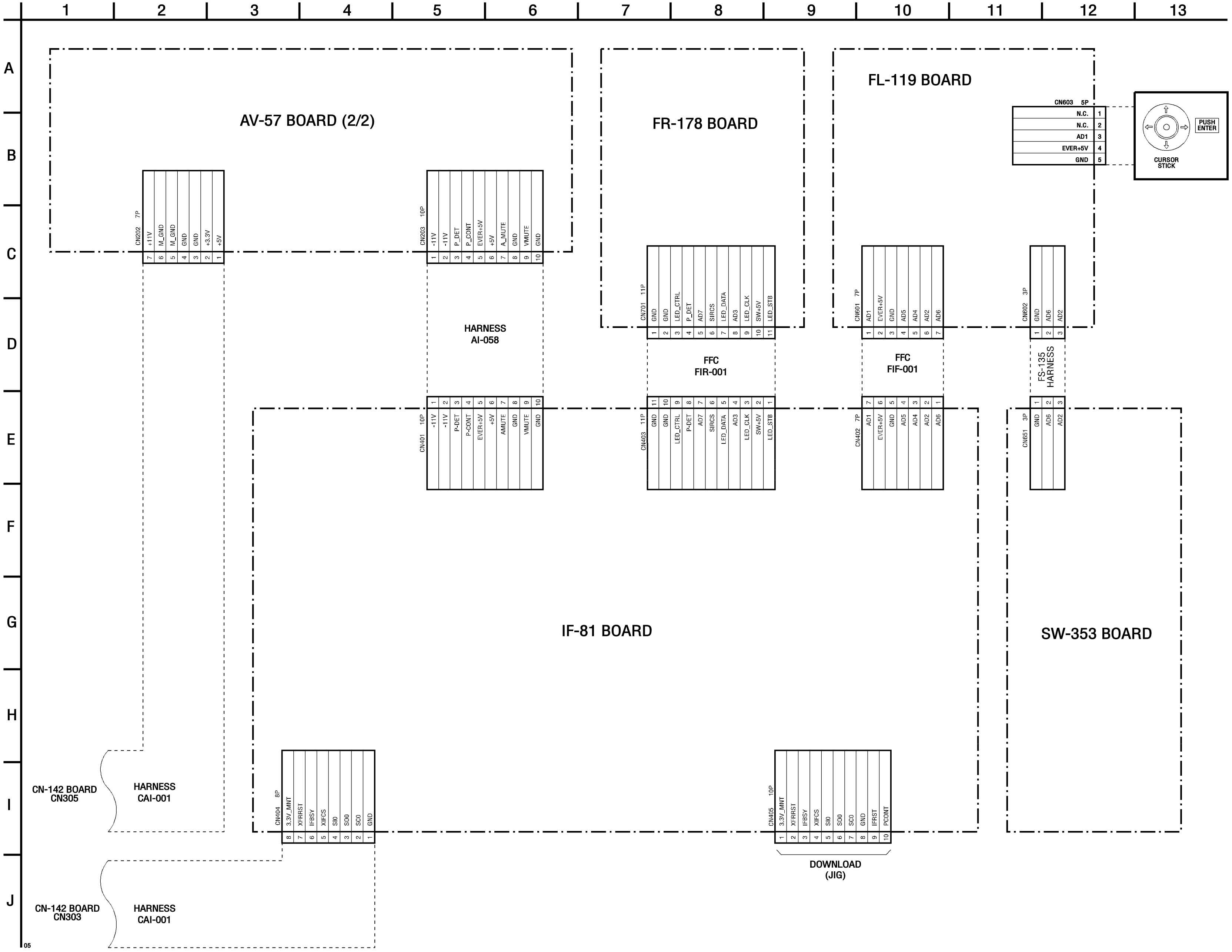
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
K
L
POWER BLOCK
CN101 2P
1 AC_IN N
2 AC_IN L
CN201 15P
P-DET 1
P-CONT 2
SW+11V 3
SW+11V 4
SW+5V 5
SW+5V 6
EVER+5V 7
SW+3.3V 8
SW+3.3V 9
D_GND 10
D_GND 11
M_GND 12
M_GND 13
SW-11V 14
SW-11V 15
HARNESS
AP-153
FFC FAE-006
CN901 21P
ER-16 BOARD
CN204 15P
CN101 21P
AV-57 BOARD (1/2)
CN201 25P
FFC
FAM-008
CN601 25P
BASE UNIT
KHM-240AAA/J1RP
OPTICAL
DEVICE
26P
TRK- 26
TRK+ 25
FCS- 24
FCS+ 23
N.C 22
CD LD 21
N.C 20
DVD LD 19
LD GND 18
SW 17
MOD 16
VR 15
PD 14
GND 13
E 12
D 11
C 10
G 9
VCC 8
VC 7
GND 6
RF 5
F 4
A 3
B 2
H 1
FFC
FMM-036
CN201 26P
MB-98 BOARD
9P
SLA+ 9
SLB+ 8
SLB- 7
SLA- 6
LED 5
GND 4
INLIM 3
SPM- 2
SPM+ 1
MOTOR SLED
M
INLIMIT SWITCH
SPINDLE MOTOR
FFC
FMD-025
CN202 9P
CN402 11P
FFC FCM-014
CN101 15P
B to B
CN103 6P
DIAG(JIG)
M851 LOADING MOTOR
B851
LM- 1
LM+ 2
LM-63 BOARD
LE-054
Rotary
Encoder
6P
LM+ 1
LM- 2
S1(OCSW1) 3
S2(OCSW2) 4
GND 5
S3(OKSW1) 6
HARNESS
RC-059
CN304 6P
CN301 11P
CN302 15P
CN305 7P
+11V 7
M_GND 6
M_GND 5
GND 4
GND 3
+3.3V 2
+5V 1
HARNESS
CAI-001
AV-57 BOARD
CN202
M951 TURN TABLE MOTOR
CN951 2P
TM+ 1
TM- 2
TM-125 BOARD
ST-113
CN502 2P
SE-122 BOARD
CN503 7P
TM- 1
TM+ 2
N.C 3
GND 4
DSENS 5
TSENS 6
+5V 7
FFC
FCS-005
CN306 7P
CN-142 BOARD
CN303 8P
3.3V_MNT 8
XFRRST 7
IFBSY 6
XIFCS 5
SIO 4
SOO 3
SCO 2
GND 1
HARNESS
CAI-001
IF-81 BOARD
CN404
05

FRAME 2 SCHEMATIC DIAGRAM


1 2 3 4 5 6 7 8 9 10 11 12 13
A B C D E F G H I J
AV-57 BOARD (2/2)
FR-178 BOARD
FL-119 BOARD
IF-81 BOARD
SW-353 BOARD
CN202 7P
7 +11V
6 M_GND
5 M_GND
4 GND
3 GND
2 +3.3V
1 +5V
CN203 10P
1 -11V
2 -11V
3 P_DET
4 P_CONT
5 EVER+5V
6 +5V
7 A_MUTE
8 GND
9 VMUTE
10 GND
HARNESS
AI-058
CN401 10P
1 -11V
2 -11V
3 P-DET
4 P-CONT
5 EVER+5V
6 +5V
7 AMUTE
8 GND
9 VMUTE
10 GND
CN701 11P
1 GND
2 GND
3 LED_CTRL
4 P_DET
5 AD7
6 SIRCS
7 LED_DATA
8 AD3
9 LED_CLK
10 SW+5V
11 LED_STB
FFC
FIR-001
CN403 11P
11 GND
10 GND
9 LED_CTRL
8 P-DET
7 AD7
6 SIRCS
5 LED_DATA
4 AD3
3 LED_CLK
2 SW+5V
1 LED_STB
CN601 7P
1 AD1
2 EVER+5V
3 GND
4 AD5
5 AD4
6 AD2
7 AD6
FFC
FIF-001
CN402 7P
7 AD1
6 EVER+5V
5 GND
4 AD5
3 AD4
2 AD2
1 AD6
CN602 3P
1 GND
2 AD6
3 AD2
FS-135
HARNESS
CN651 3P
1 GND
2 AD6
3 AD2
CN603 5P
N.C. 1
N.C. 2
AD1 3
EVER+5V 4
GND 5
PUSH
ENTER
CURSOR
STICK
CN404 8P
8 3.3V_MNT
7 XFRRST
6 IFBSY
5 XIFCS
4 SI0
3 SO0
2 SC0
1 GND
CN405 10P
1 3.3V_MNT
2 XFRRST
3 IFBSY
4 XIFCS
5 SI0
6 SO0
7 SC0
8 GND
9 IFRST
10 PCONT
DOWNLOAD
(JIG)
CN-142 BOARD
CN305
HARNESS
CAI-001
CN-142 BOARD
CN303
HARNESS
CAI-001
05

There are a few cases that the part isn't mounted in this model is printed on this diagram.

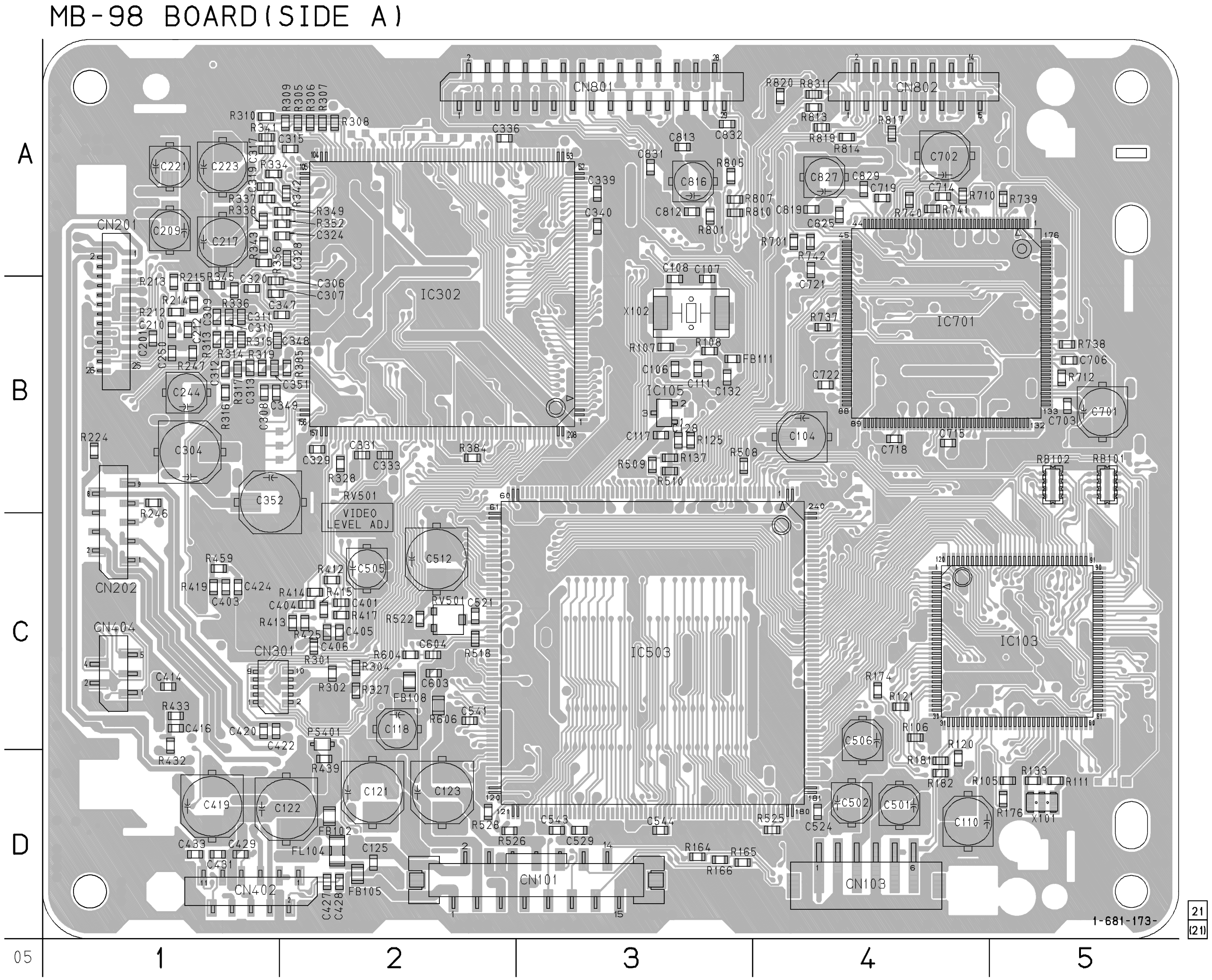
4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

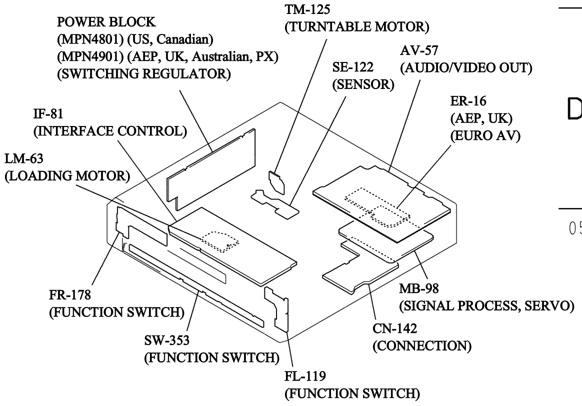
MB-98 (SIGNAL PROCESS, SERVO) PRINTED WIRING BOARD

– Ref. No.: MB-98 board; 2,000 series –

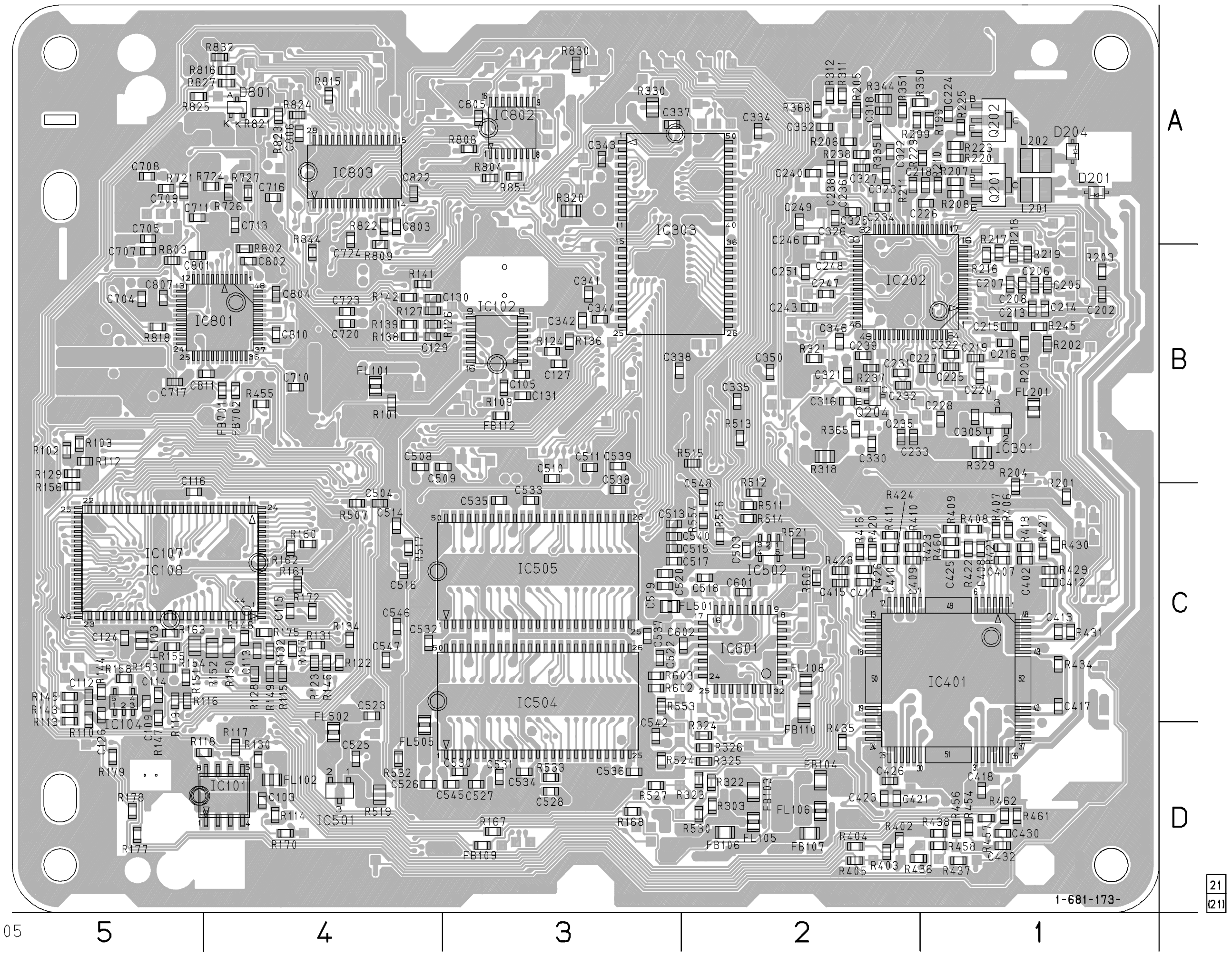
MB-98 BOARD (SIDE A)

CN101	D-3
CN103	D-4
CN201	A-1
CN202	C-1
CN402	D-1
CN801	A-3
IC103	C-5
IC302	B-2
IC503	C-3


MB-98 BOARD(SIDE A)
A
B
C
D
1
2
3
4
5
05
CN801
CN802
CN201
CN202
CN404
CN301
CN402
CN101
CN103
IC302
IC701
IC105
IC503
IC103
X102
X101
RV501
VIDEO LEVEL ADJ
RB102
RB101
C221
C223
C209
C217
C244
C304
C352
C505
C512
C118
C419
C122
C121
C123
C816
C827
C702
C104
C701
C506
C502
C501
C110
1-681-173-
21
(21)


POWER BLOCK
(MPN4801) (US, Canadian)
(MPN4901) (AEP, UK, Australian, PX)
(SWITCHING REGULATOR)
TM-125
(TURNTABLE MOTOR)
SE-122
(SENSOR)
AV-57
(AUDIO/VIDEO OUT)
ER-16
(AEP, UK)
(EURO AV)
IF-81
(INTERFACE CONTROL)
LM-63
(LOADING MOTOR)
FR-178
(FUNCTION SWITCH)
SW-353
(FUNCTION SWITCH)
FL-119
(FUNCTION SWITCH)
CN-142
(CONNECTION)
MB-98
(SIGNAL PROCESS, SERVO)

MB-98 BOARD(SIDE B)


A
B
C
D
5
4
3
2
1
05
IC101
IC102
IC107
IC108
IC109
IC202
IC301
IC303
IC401
IC501
IC502
IC504
IC505
IC601
IC801
IC802
IC803
Q201
Q202
Q204
D201
D204
D801
L201
L202
1-681-173-
21
(21)

MB-98 BOARD (SIDE B)

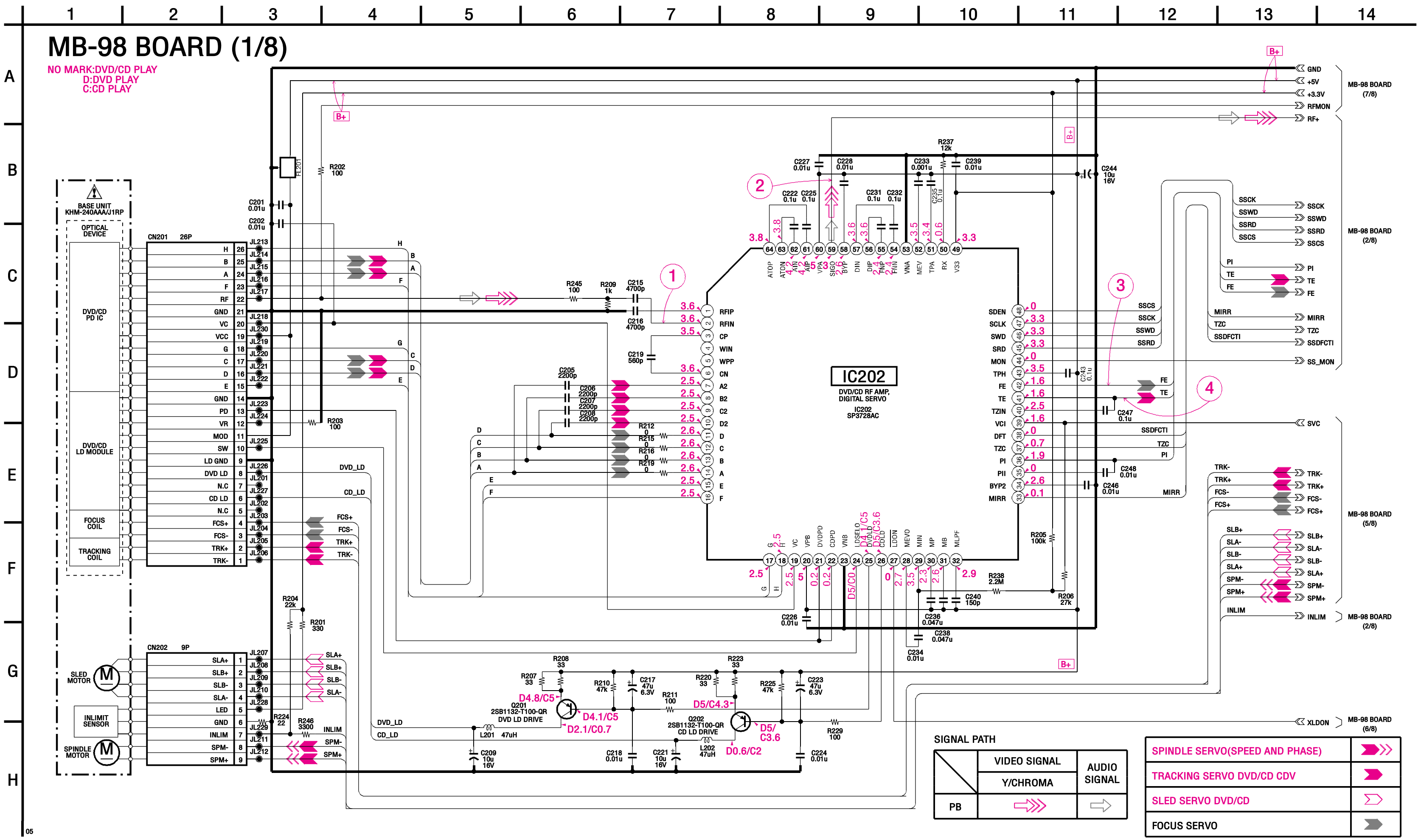
IC101	D-4
IC102	B-3
IC107	C-5
IC202	B-2
IC301	B-1
IC303	A-3
IC401	C-1
IC501	D-4
IC502	C-2
IC504	C-3
IC505	C-3
IC601	C-2
IC801	B-4
IC802	A-3
Q201	A-1
Q202	A-1

MB-98 (RF AMP, SERVO) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-98 board; 2,000 series –

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.


1
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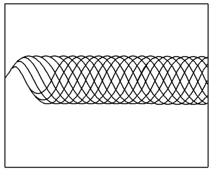
8
9
10
11
12
13
14
A
B
C
D
E
F
G
H
MB-98 BOARD (1/8)
NO MARK:DVD/CD PLAY
D:DVD PLAY
C:CD PLAY
BASE UNIT
KHM-240AAA/J1RP
OPTICAL DEVICE
DVD/CD PD IC
DVD/CD LD MODULE
FOCUS COIL
TRACKING COIL
SLED MOTOR
INLIMIT SENSOR
SPINDLE MOTOR
CN201 26P
CN202 9P
IC202
DVD/CD RF AMP, DIGITAL SERVO
IC202 SP3728AC
Q201 2SB1132-T100-QR DVD LD DRIVE
Q202 2SB1132-T100-QR CD LD DRIVE
D4.8/C5
D4.1/C5
D2.1/C0.7
D5/C4.3
D5/C3.6
D0.6/C2
GND
+5V
+3.3V
RFMON
RF+
MB-98 BOARD (7/8)
SSCK
SSWD
SSRD
SSCS
MB-98 BOARD (2/8)
PI
TE
FE
MIRR
TZC
SSDFCTI
SS_MON
SVC
TRK-
TRK+
FCS-
FCS+
MB-98 BOARD (5/8)
SLB+
SLA-
SLB-
SLA+
SPM-
SPM+
INLIM
MB-98 BOARD (2/8)
XLDON
MB-98 BOARD (6/8)
B+
1
2
3
4
SIGNAL PATH
VIDEO SIGNAL
Y/CHROMA
AUDIO SIGNAL
PB
SPINDLE SERVO(SPEED AND PHASE)
TRACKING SERVO DVD/CD CDV
SLED SERVO DVD/CD
FOCUS SERVO
05

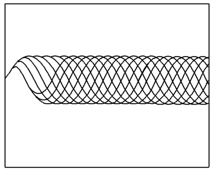
• Waveforms

❶ IC202 ② (DVD play)
200 mV/DIV 50 ns/DIV



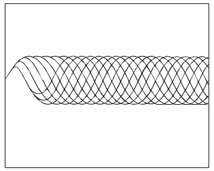
570 mVp-p

❶ IC202 ② (CD play)
200 mV/DIV 200 ns/DIV



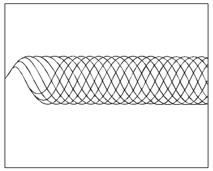
550 mVp-p

❷ IC202 (59) (DVD play)
500 mV/DIV 50 ns/DIV



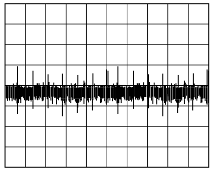
1.4 Vp-p

❷ IC202 (59) (CD play)
500 mV/DIV 200 ns/DIV



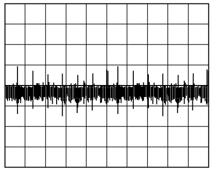
1.4 Vp-p

❸ IC202 ㊷ (DVD play)
100 mV/DIV 50 ms/DIV



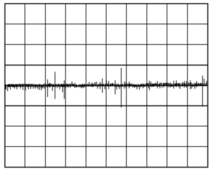
180 mVp-p

❸ IC202 ㊷ (CD play)
500 mV/DIV 50 ms/DIV



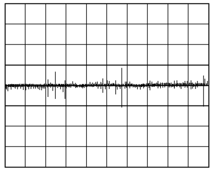
860 mVp-p

❹ IC202 ㊶ (DVD play)
500 mV/DIV 50 ms/DIV



1.5 Vp-p

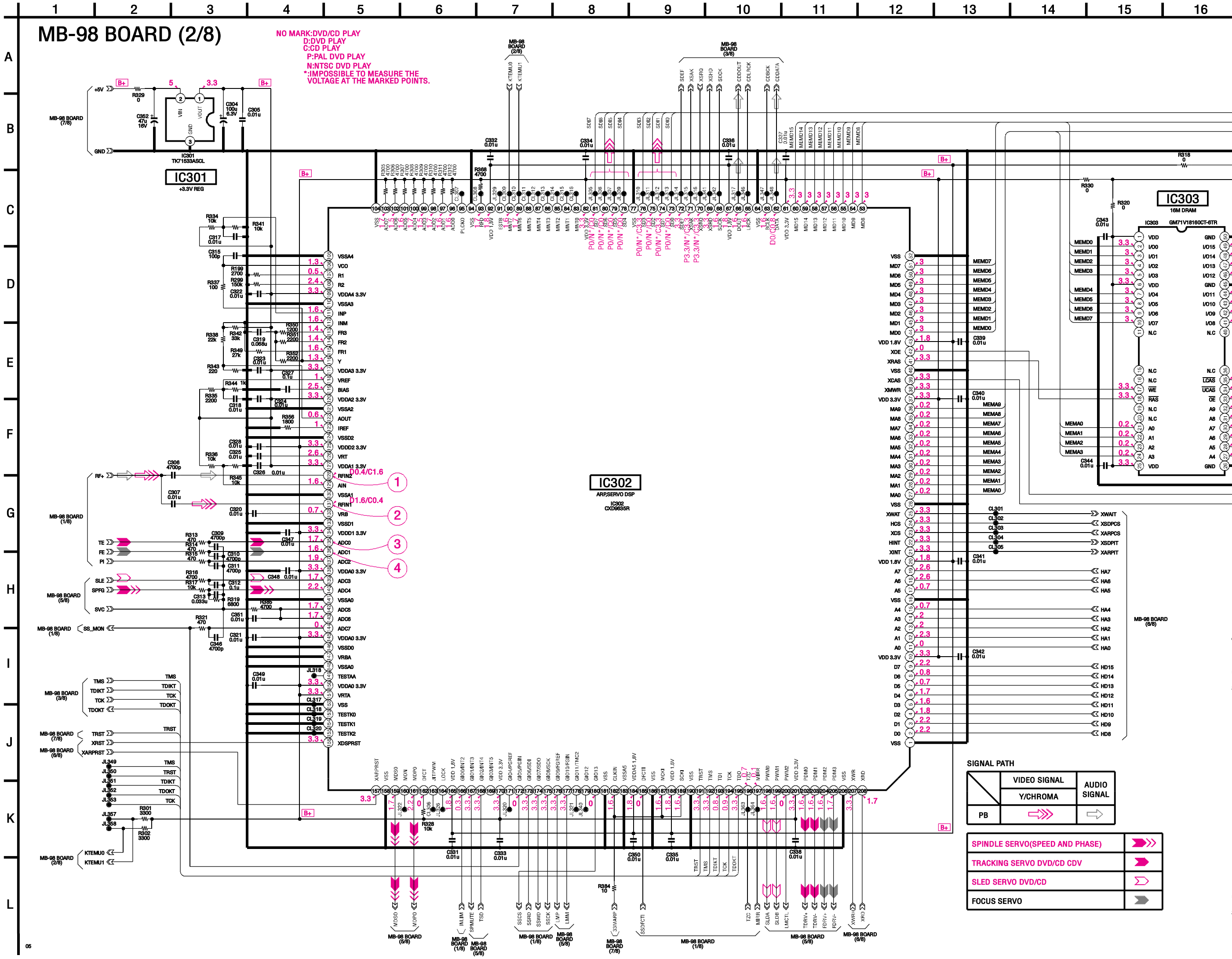
❹ IC202 ㊶ (CD play)
500 mV/DIV 200 ms/DIV



1.7 Vp-p

MB-98 (ARP, SERVO DSP) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-98 board; 2,000 series –


MB-98 BOARD (2/8)
IC301
TK71533ASCL
+3.3V REG
IC302
ARP,SERVO DSP
IC302
CXD9635R
IC303
16M DRAM
IC303 GM71V18160CT-6TR
MB-98 BOARD (7/8)
MB-98 BOARD (1/8)
MB-98 BOARD (3/8)
MB-98 BOARD (5/8)
MB-98 BOARD (6/8)
MB-98 BOARD (2/8)
+1.8V
+3.3V
B+
RF+
TE
FE
PI
SLE
SPFG
SVC
SS_MON
TMS
TDIKT
TCK
TDOKT
TRST
XRST
XARPRST
KTEMU0
KTEMU1
SDI7
SDI6
SDI5
SDI4
SDI3
SDI2
SDI1
SDI0
XWAIT
XSDPCS
XARPCS
XSDPIT
XARPIT
HA7
HA6
HA5
HA4
HA3
HA2
HA1
HA0
HD15
HD14
HD13
HD12
HD11
HD10
HD9
HD8
D0.4/C1.6
D1.6/C0.4
1
2
3
4
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
A
B
C
D
E
F
G
H
I
J
K
L

NO MARK:DVD/CD PLAY
D:DVD PLAY
C:CD PLAY
P:PAL DVD PLAY
N:NTSC DVD PLAY
*:IMPOSSIBLE TO MEASURE THE VOLTAGE AT THE MARKED POINTS.

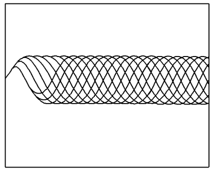
SIGNAL PATH

	VIDEO SIGNAL Y/CHROMA	AUDIO SIGNAL
PB	⇨≫	⇨

SPINDLE SERVO(SPEED AND PHASE)	➤≫
TRACKING SERVO DVD/CD CDV	➤
SLED SERVO DVD/CD	▷
FOCUS SERVO	➤

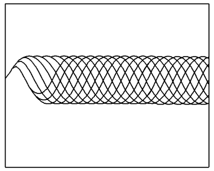
• Waveforms

❶ IC302 (128) (CD play)
500 mV/DIV 200 ns/DIV



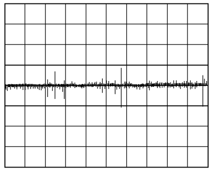
1.4 Vp-p

❷ IC302 (131) (DVD play)
500 mV/DIV 100 ns/DIV



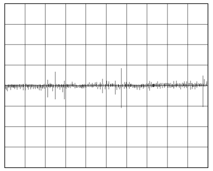
1.4 Vp-p

❸ IC302 (135) (DVD play)
500 mV/DIV 50 ms/DIV



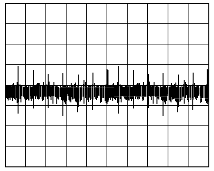
1.4 Vp-p

❸ IC302 (135) (CD play)
500 mV/DIV 200 ms/DIV



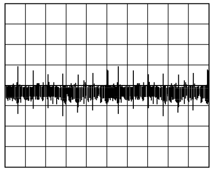
1.7 Vp-p

❹ IC302 (136) (DVD play)
100 mV/DIV 50 ms/DIV



160 mVp-p

❹ IC302 (136) (CD play)
500 mV/DIV 50 ms/DIV

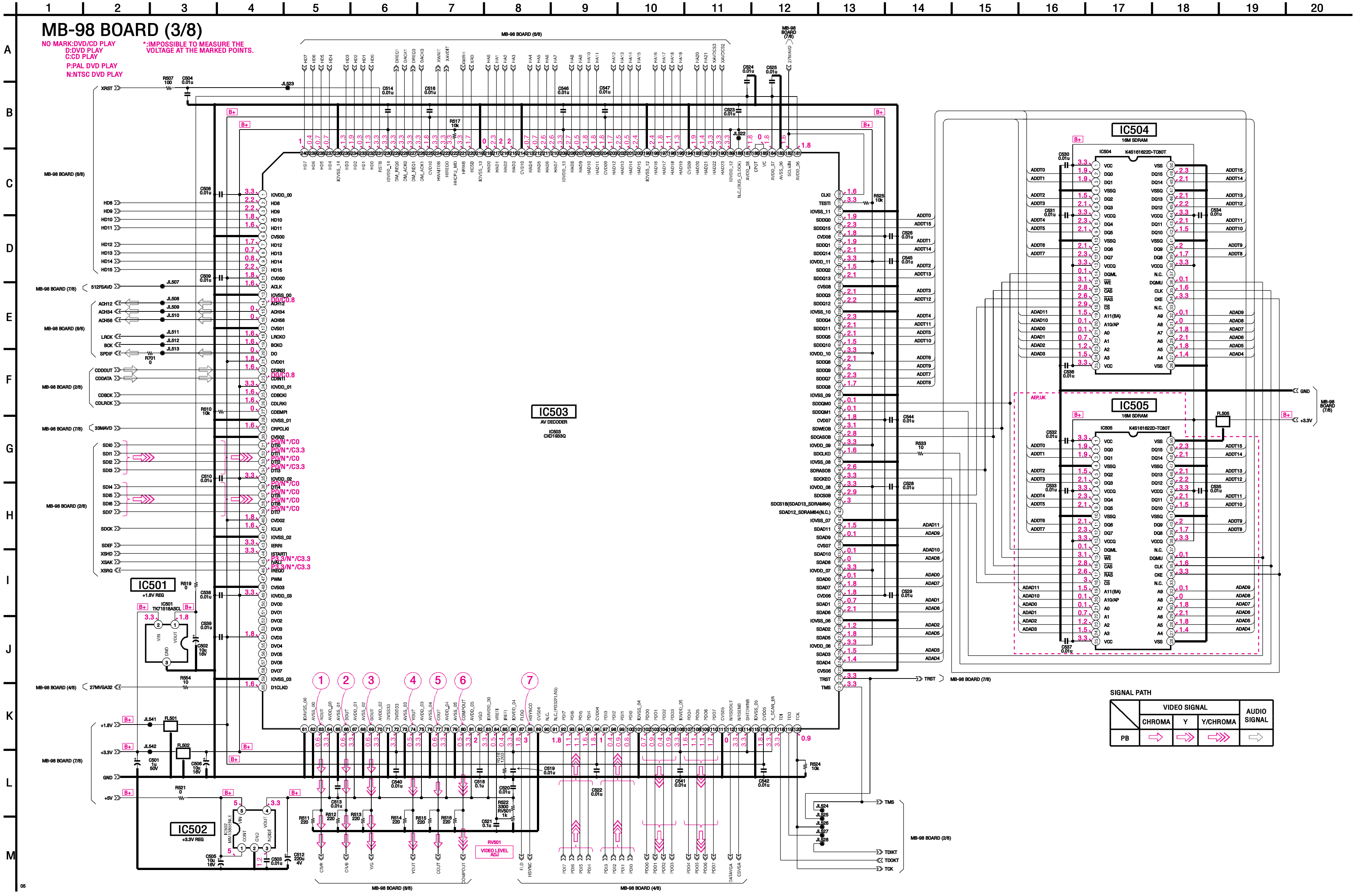


860 mVp-p

ARP, SERVO DSP
MB-98 (2/8)

MB-98 (AV DECODER) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-98 board; 2,000 series –


MB-98 BOARD (3/8)
NO MARK:DVD/CD PLAY
D:DVD PLAY
C:CD PLAY
P:PAL DVD PLAY
N:NTSC DVD PLAY
*:IMPOSSIBLE TO MEASURE THE VOLTAGE AT THE MARKED POINTS.
IC503 AV DECODER
IC503 CXD1933Q
IC504 16M SDRAM
IC504 K4S161622D-TC80T
IC505 16M SDRAM
IC505 K4S161622D-TC80T
IC501 +1.8V REG
IC501 TK71518ASCL
IC502 +3.3V REG
RV501 VIDEO LEVEL ADJ
MB-98 BOARD (6/8)
MB-98 BOARD (7/8)
MB-98 BOARD (8/8)
MB-98 BOARD (2/8)
MB-98 BOARD (4/8)
AEP,UK
GND
+3.3V
TRST
TMS
TDKT
TDOKT
TCK
05

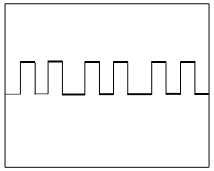
SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	⇨	⇨	⇨	⇨

AV DECODER
MB-98 (3/8)

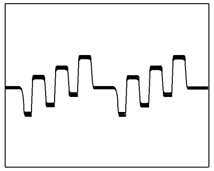
• Waveforms

❶ IC503 (63) : AEP, UK
(LINE : RGB mode)



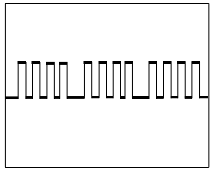
660 mVp-p (H)

❶ IC503 (63) : EXCEPT AEP, UK



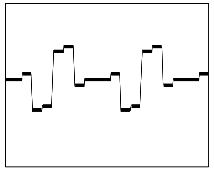
620 mVp-p (H)

❷ IC503 (66) : AEP, UK
(LINE : RGB mode)



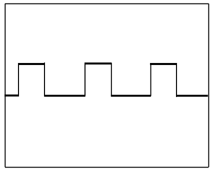
660 mVp-p (H)

❷ IC503 (66) : EXCEPT AEP, UK



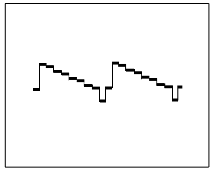
620 mVp-p (H)

❸ IC503 (69) : AEP, UK
(LINE : RGB mode)



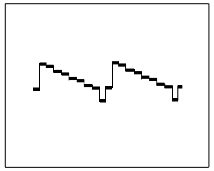
660 mVp-p (H)

❸ IC503 (69) : EXCEPT AEP, UK



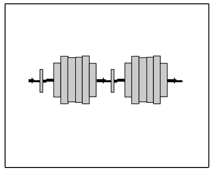
940 mVp-p (H)

❹ IC503 (74)



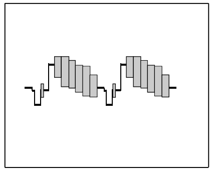
940 mVp-p (H)

❺ IC503 (77)



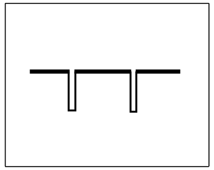
810 mVp-p (H)

❻ IC503 (80)



1.1 Vp-p (H)

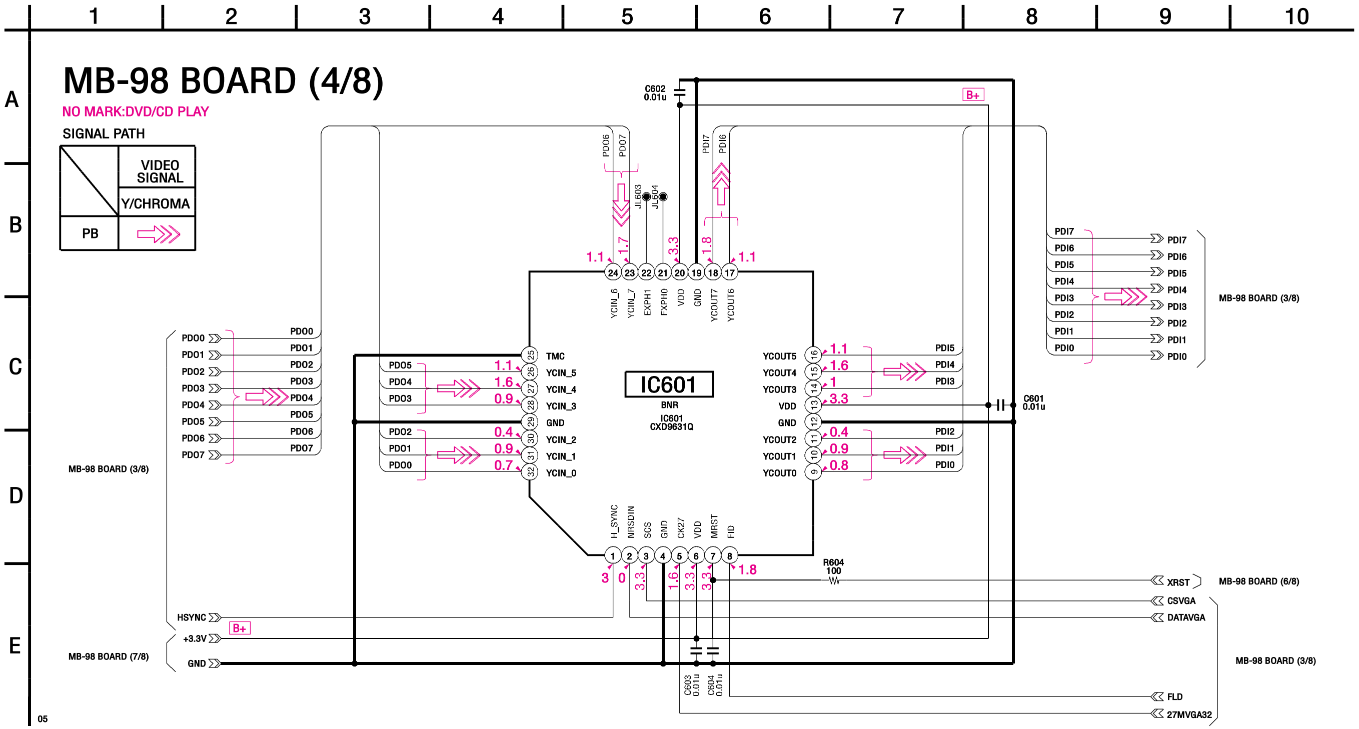
❼ IC503 (88)



3.2 Vp-p (H)

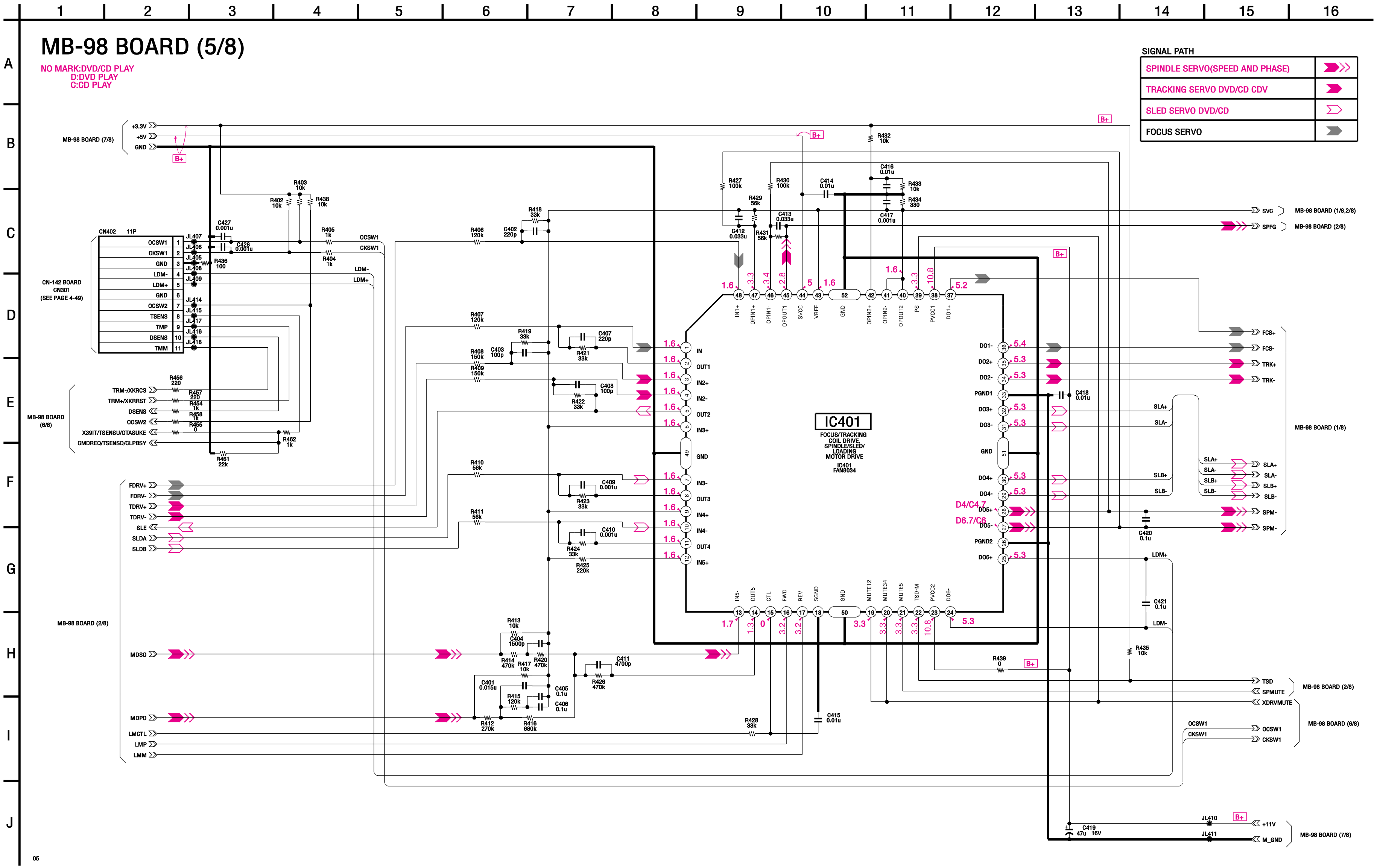
MB-98 (BNR) SCHEMATIC DIAGRAM **• See page 4-7 for printed wiring board.**

– Ref. No.: MB-98 board; 2,000 series –


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
MB-98 BOARD (4/8)
NO MARK:DVD/CD PLAY
SIGNAL PATH
VIDEO SIGNAL
Y/CHROMA
PB
C602 0.01u
B+
PDO6
PDO7
JL603
JL604
PDI7
PDI6
IC601
BNR
IC601 CXD9631Q
YCIN_6
YCIN_7
EXPH1
EXPH0
VDD
GND
YCOUT7
YCOUT6
TMC
YCIN_5
YCIN_4
YCIN_3
GND
YCIN_2
YCIN_1
YCIN_0
YCOUT5
YCOUT4
YCOUT3
VDD
GND
YCOUT2
YCOUT1
YCOUT0
H_SYNC
NRSDIN
SCS
GND
CK27
VDD
MRST
FID
PDO0
PDO1
PDO2
PDO3
PDO4
PDO5
PDO6
PDO7
PDI0
PDI1
PDI2
PDI3
PDI4
PDI5
PDI6
PDI7
C601 0.01u
R604 100
C603 0.01u
C604 0.01u
HSYNC
+3.3V
GND
XRST
CSVGA
DATAVGA
FLD
27MVGA32
MB-98 BOARD (3/8)
MB-98 BOARD (7/8)
MB-98 BOARD (6/8)
1.1
1.7
3.3
1.8
1.1
1.1
1.6
0.9
0.4
0.9
0.7
1.1
1.6
1
3.3
0.4
0.9
0.8
3
0
3.3
1.6
3.3
3.3
1.8
05

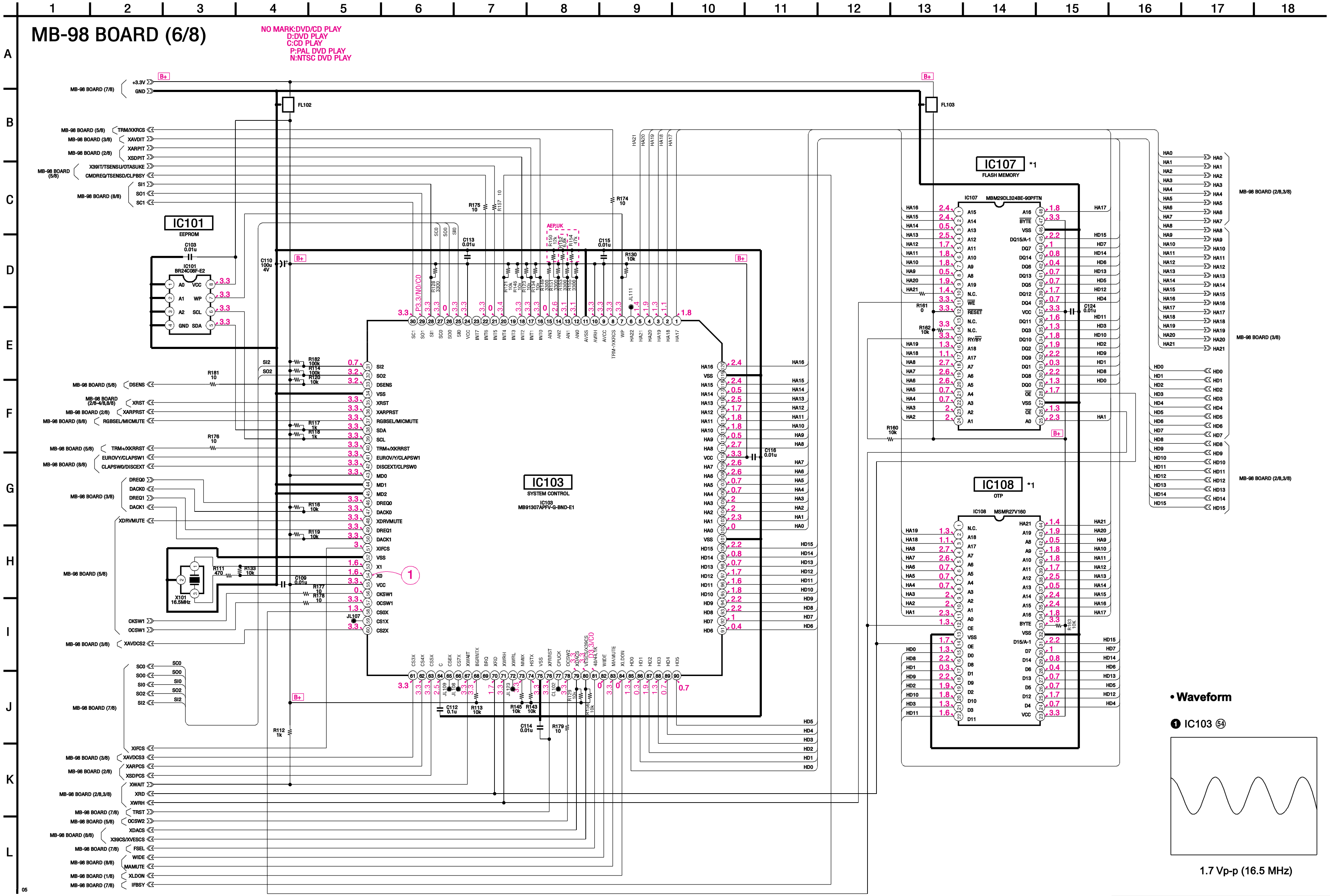
MB-98 (DRIVE) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-98 board; 2,000 series –


MB-98 BOARD (5/8)
NO MARK:DVD/CD PLAY
D:DVD PLAY
C:CD PLAY
SIGNAL PATH
SPINDLE SERVO(SPEED AND PHASE)
TRACKING SERVO DVD/CD CDV
SLED SERVO DVD/CD
FOCUS SERVO
IC401
FOCUS/TRACKING COIL DRIVE, SPINDLE/SLED/ LOADING MOTOR DRIVE
IC401 FAN8034
CN402 11P
CN-142 BOARD CN301 (SEE PAGE 4-49)
OCSW1
CKSW1
GND
LDM-
LDM+
OCSW2
TSENS
TMP
DSENS
TMM
MB-98 BOARD (7/8)
+3.3V
+5V
B+
MB-98 BOARD (6/8)
TRM-/XKRCS
TRM+/XKRRST
X39IT/TSENSU/OTASUKE
CMDREQ/TSENSD/CLPBSY
MB-98 BOARD (2/8)
FDRV+
FDRV-
TDRV+
TDRV-
SLE
SLDA
SLDB
MDSO
MDPO
LMCTL
LMP
LMM
SVC
SPFG
MB-98 BOARD (1/8,2/8)
FCS+
FCS-
TRK+
TRK-
SLA+
SLA-
SLB+
SLB-
SPM-
MB-98 BOARD (1/8)
TSD
SPMUTE
XDRVMUTE
MB-98 BOARD (6/8)
+11V
M_GND
JL410
JL411
C419 47u 16V
R435 10k
R439 0
R428 33k
C415 0.01u
C420 0.1u
C421 0.1u
C418 0.01u
D4/C4.7
D6.7/C6
05

MB-98 (SYSTEM CONTROL) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-98 board; 2,000 series –


MB-98 BOARD (6/8)
IC101
EEPROM
IC101
BR24C08F-E2
IC103
SYSTEM CONTROL
IC103
MB91307APFV-G-BND-E1
IC107
FLASH MEMORY
IC107 MBM29DL324BE-90PFTN
IC108
OTP
IC108 MSMR27V160
X101
16.5MHz
FL102
FL103
B+
MB-98 BOARD (7/8)
MB-98 BOARD (5/8)
MB-98 BOARD (3/8)
MB-98 BOARD (2/8)
MB-98 BOARD (8/8)
MB-98 BOARD (1/8)
MB-98 BOARD (2/8,3/8)
MB-98 BOARD (3/8)
AEP,UK
*1
1

NO MARK:DVD/CD PLAY
D:DVD PLAY
C:CD PLAY
P:PAL DVD PLAY
N:NTSC DVD PLAY

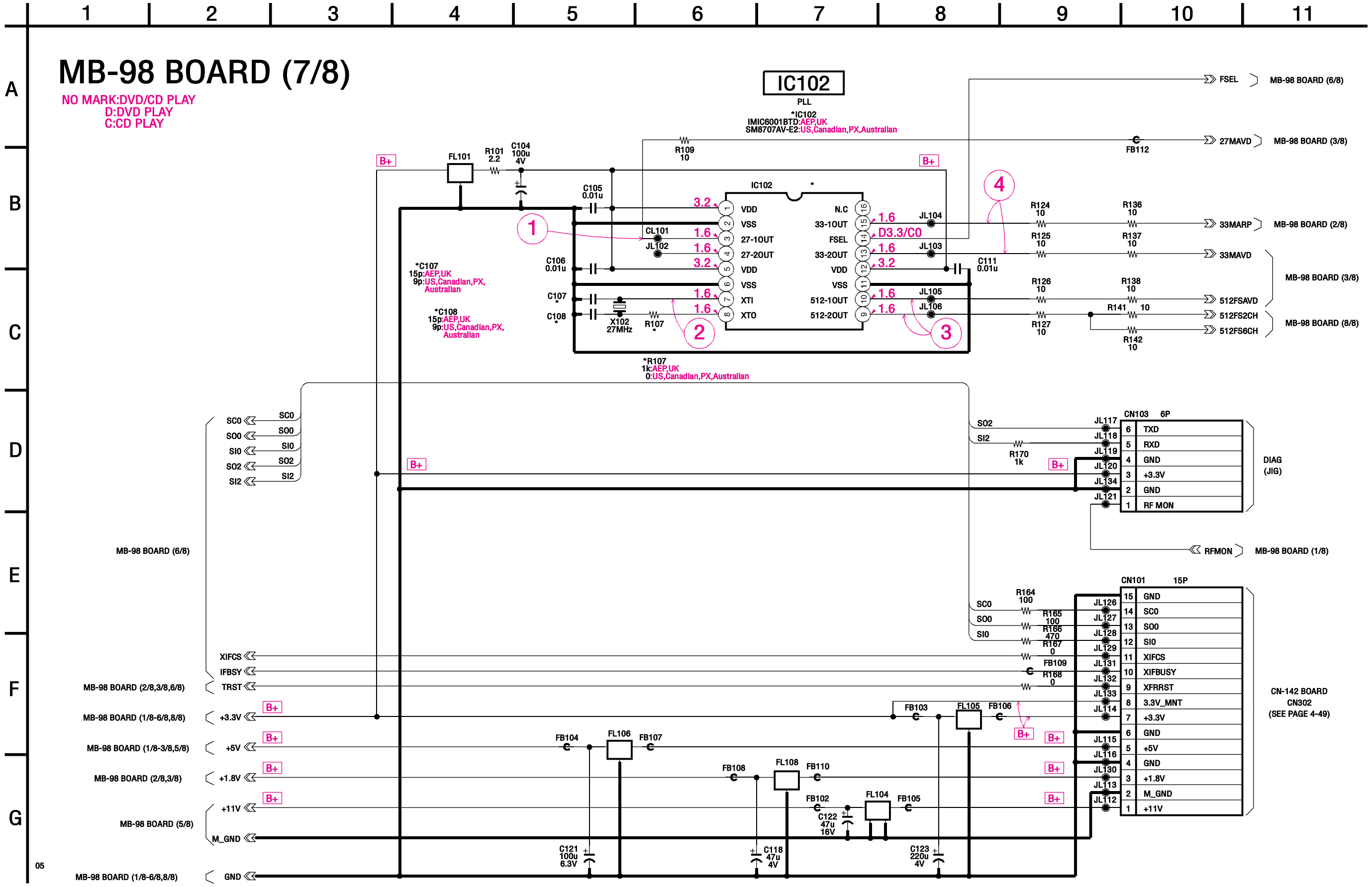
• Waveform

❶ IC103 (54)

1.7 Vp-p (16.5 MHz)

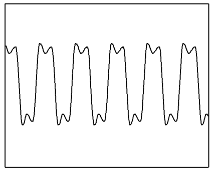
MB-98 (CLOCK GENERATOR) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-98 board; 2,000 series –


1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
MB-98 BOARD (7/8)
NO MARK:DVD/CD PLAY
D:DVD PLAY
C:CD PLAY
IC102
PLL
*IC102
IMIC6001BTD:AEP,UK
SM8707AV-E2:US,Canadian,PX,Australian
B+
FL101
R101 2.2
C104 100u 4V
R109 10
C105 0.01u
C106 0.01u
C107 *
C108 *
*C107
15p:AEP,UK
9p:US,Canadian,PX, Australian
*C108
15p:AEP,UK
9p:US,Canadian,PX, Australian
X102 27MHz
R107 *
*R107
1k:AEP,UK
0:US,Canadian,PX,Australian
CL101
JL102
IC102 *
1 VDD
2 VSS
3 27-1OUT
4 27-2OUT
5 VDD
6 VSS
7 XTI
8 XTO
16 N.C
15 33-1OUT
14 FSEL
13 33-2OUT
12 VDD
11 VSS
10 512-1OUT
9 512-2OUT
3.2
1.6
1.6
3.2
1.6
1.6
1.6
D3.3/C0
1.6
3.2
1.6
1.6
JL104
JL103
JL105
JL106
C111 0.01u
FSEL
MB-98 BOARD (6/8)
FB112
27MAVD
MB-98 BOARD (3/8)
R124 10
R136 10
33MARP
MB-98 BOARD (2/8)
R125 10
R137 10
33MAVD
MB-98 BOARD (3/8)
R126 10
R138 10
512FSAVD
R141 10
R127 10
512FS2CH
R142 10
512FS6CH
MB-98 BOARD (8/8)
SC0
SO0
SI0
SO2
SI2
MB-98 BOARD (6/8)
SO2
SI2
R170 1k
JL117
JL118
JL119
JL120
JL134
JL121
CN103 6P
6 TXD
5 RXD
4 GND
3 +3.3V
2 GND
1 RF MON
DIAG (JIG)
RFMON
MB-98 BOARD (1/8)
CN101 15P
R164 100
R165 100
R166 470
R167 0
FB109
R168 0
JL126
JL127
JL128
JL129
JL131
JL132
JL133
JL114
JL115
JL116
JL130
JL113
JL112
15 GND
14 SC0
13 SO0
12 SI0
11 XIFCS
10 XIFBUSY
9 XFRRST
8 3.3V_MNT
7 +3.3V
6 GND
5 +5V
4 GND
3 +1.8V
2 M_GND
1 +11V
CN-142 BOARD
CN302
(SEE PAGE 4-49)
XIFCS
IFBSY
TRST
MB-98 BOARD (2/8,3/8,6/8)
+3.3V
MB-98 BOARD (1/8-6/8,8/8)
+5V
MB-98 BOARD (1/8-3/8,5/8)
+1.8V
MB-98 BOARD (2/8,3/8)
+11V
M_GND
MB-98 BOARD (5/8)
GND
MB-98 BOARD (1/8-6/8,8/8)
05
FB103
FL105
FB106
FB104
FL106
FB107
FB108
FL108
FB110
FB102
FL104
FB105
C121 100u 6.3V
C118 47u 4V
C122 47u 16V
C123 220u 4V

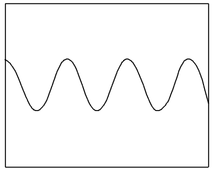
• Waveforms

❶ IC102 ③



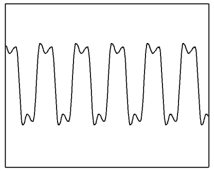
3.5 Vp-p (27 MHz)

❷ IC102 ⑦



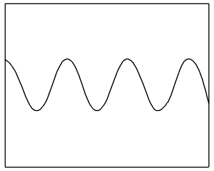
1.5 Vp-p (27 MHz)

❸ IC102 ⑨, ⑩



DVD : 3.3 Vp-p (24.57 MHz)
CD : 3.3 Vp-p (22.58 MHz)

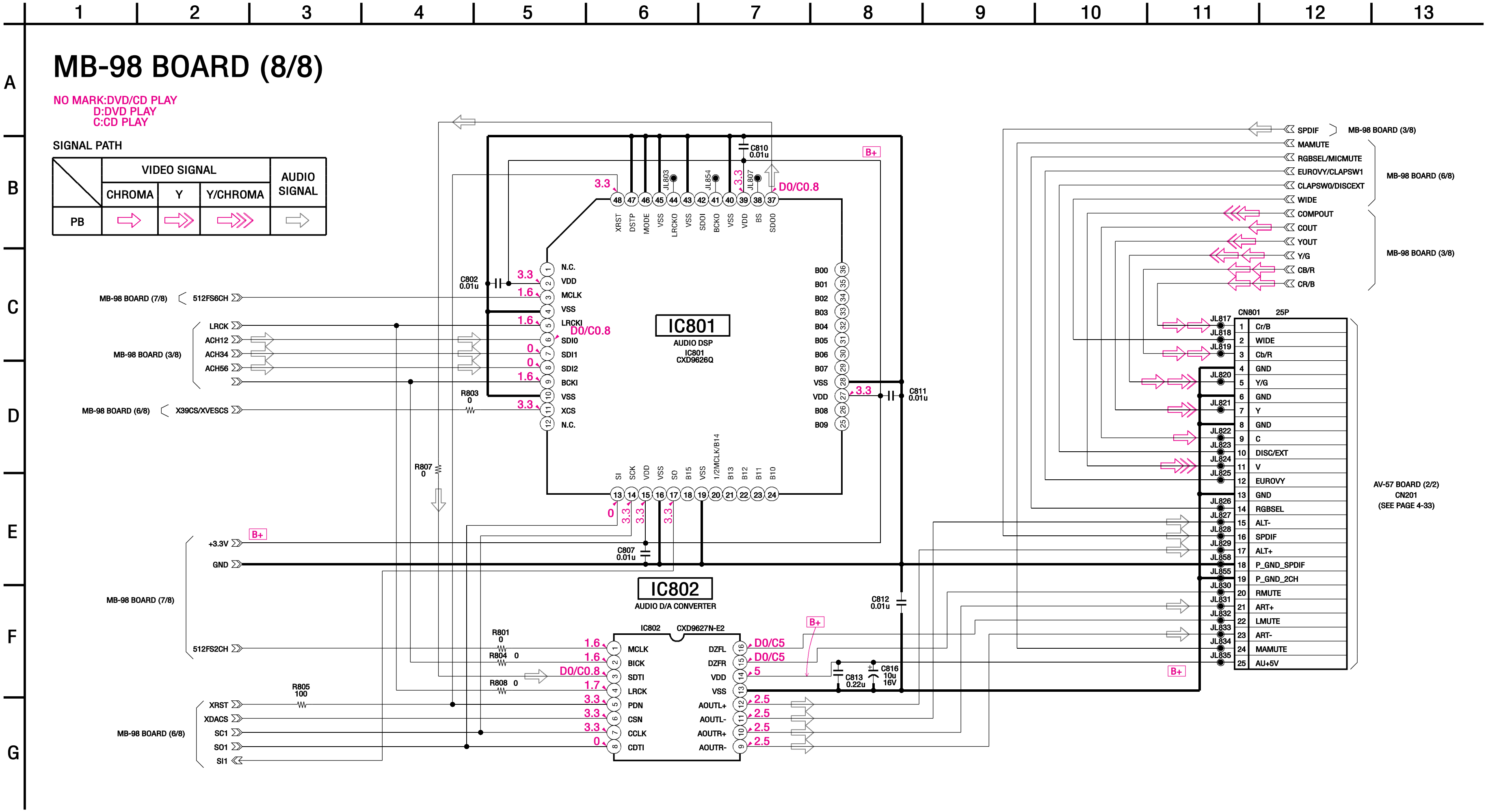
❹ IC102 ⑬, ⑮



3.2 Vp-p (33.87 MHz)

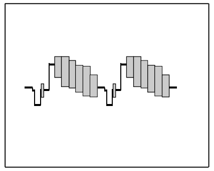
MB-98 (AUDIO DSP, D/A CONVERTER) SCHEMATIC DIAGRAM • **See page 4-7 for printed wiring board.**

– Ref. No.: MB-98 board; 2,000 series –


1 2 3 4 5 6 7 8 9 10 11 12 13
A B C D E F G
MB-98 BOARD (8/8)
NO MARK:DVD/CD PLAY
D:DVD PLAY
C:CD PLAY
SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
AUDIO SIGNAL
PB
IC801
AUDIO DSP
IC801
CXD9626Q
N.C.
VDD
MCLK
VSS
LRCKI
SDI0
SDI1
SDI2
BCKI
VSS
XCS
N.C.
XRST
DSTP
MODE
VSS
LRCKO
VSS
SDOI
BCKO
VSS
VDD
BS
SDO0
B00
B01
B02
B03
B04
B05
B06
B07
VSS
VDD
B08
B09
SI
SCK
VDD
VSS
SO
B15
VSS
1/2MCLK/B14
B13
B12
B11
B10
JL803
JL854
JL807
C810
0.01u
C802
0.01u
C811
0.01u
C807
0.01u
C812
0.01u
C813
0.22u
C816
10u
16V
R803
0
R807
0
R801
0
R804 0
R808 0
R805
100
3.3
1.6
D0/C0.8
0
B+
MB-98 BOARD (7/8)
512FS6CH
LRCK
ACH12
ACH34
ACH56
MB-98 BOARD (3/8)
MB-98 BOARD (6/8)
X39CS/XVESCS
+3.3V
GND
512FS2CH
XRST
XDACS
SC1
SO1
SI1
IC802
AUDIO D/A CONVERTER
IC802 CXD9627N-E2
MCLK
BICK
SDTI
LRCK
PDN
CSN
CCLK
CDTI
DZFL
DZFR
VDD
VSS
AOUTL+
AOUTL-
AOUTR+
AOUTR-
1.6
1.7
D0/C5
5
2.5
SPDIF
MAMUTE
RGBSEL/MICMUTE
EUROVY/CLAPSW1
CLAPSW0/DISCEXT
WIDE
COMPOUT
COUT
YOUT
Y/G
CB/R
CR/B
MB-98 BOARD (3/8)
MB-98 BOARD (6/8)
CN801 25P
1 Cr/B
2 WIDE
3 Cb/R
4 GND
5 Y/G
6 GND
7 Y
8 GND
9 C
10 DISC/EXT
11 V
12 EUROVY
13 GND
14 RGBSEL
15 ALT-
16 SPDIF
17 ALT+
18 P_GND_SPDIF
19 P_GND_2CH
20 RMUTE
21 ART+
22 LMUTE
23 ART-
24 MAMUTE
25 AU+5V
JL817
JL818
JL819
JL820
JL821
JL822
JL823
JL824
JL825
JL826
JL827
JL828
JL829
JL858
JL855
JL830
JL831
JL832
JL833
JL834
JL835
AV-57 BOARD (2/2)
CN201
(SEE PAGE 4-33)

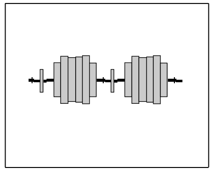
• Waveforms

❶ IC102 ㉑ : AEP, UK
IC102 ㉝ : EXCEPT AEP, UK



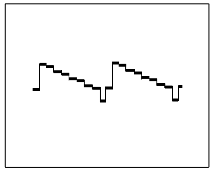
2.4 Vp-p (H)

❷ IC102 ⑲ : AEP, UK
IC102 ㉛ : EXCEPT AEP, UK



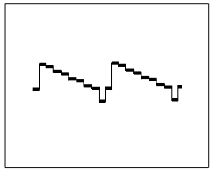
1.8 Vp-p (H)

❸ IC102 ⑰ : AEP, UK
IC102 ㉙ : EXCEPT AEP, UK



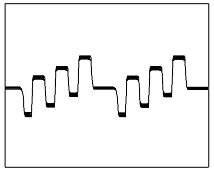
2.0 Vp-p (H)

❹ IC102 ㉔ : EXCEPT AEP, UK



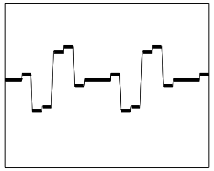
2.0 Vp-p (H)

❺ IC102 ㉒ : EXCEPT AEP, UK



1.3 Vp-p (H)

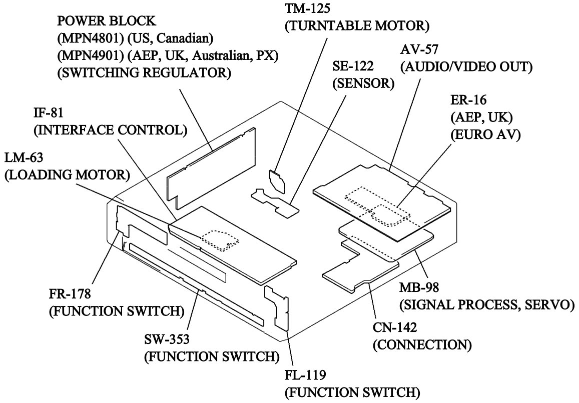
❻ IC102 ⑳ : EXCEPT AEP, UK



1.3 Vp-p (H)

AV-57 BOARD

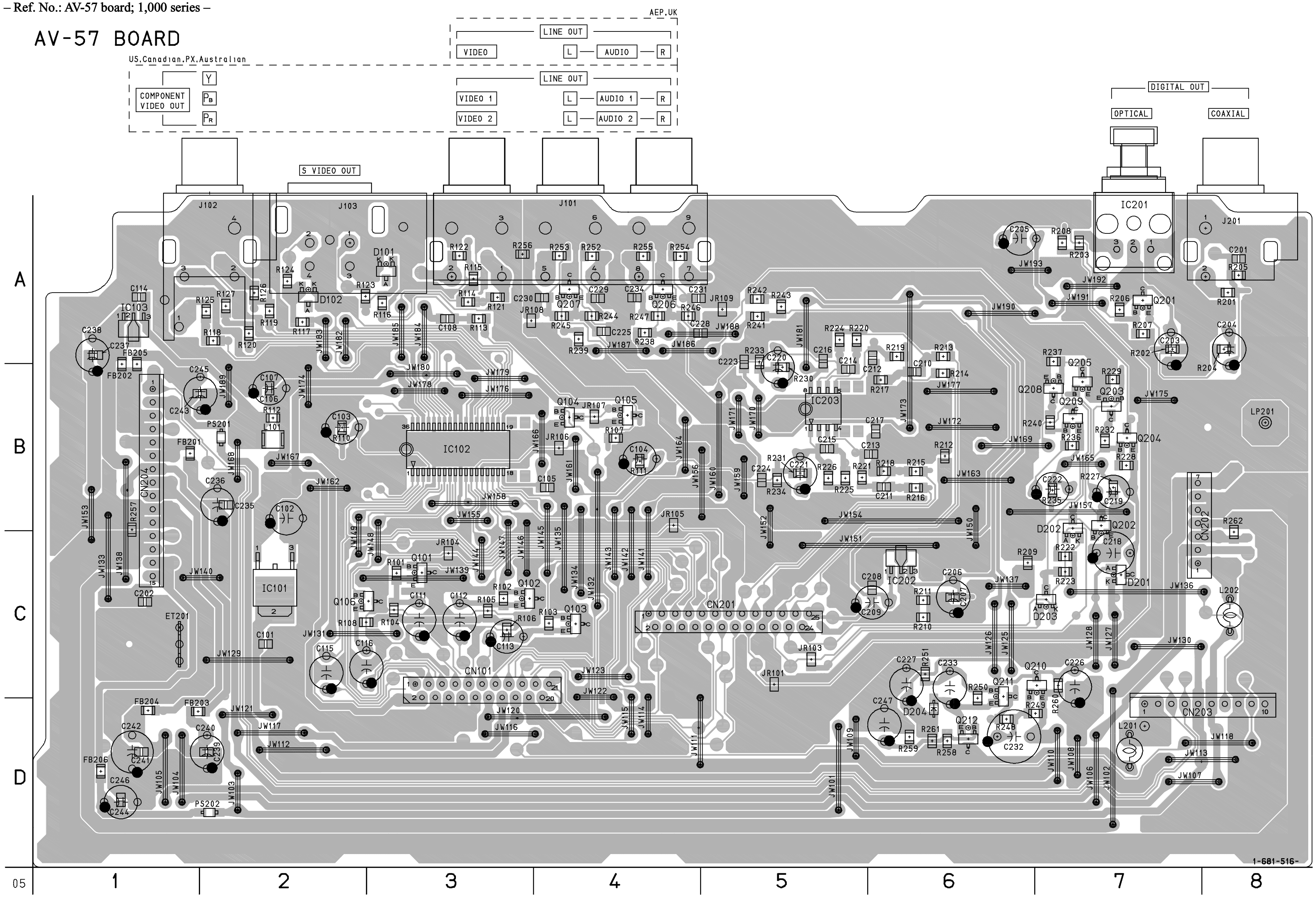
CN101	D-3
CN201	C-5
CN202	B-7
CN203	D-8
CN204	B-1
D101	A-3
D102	A-2
D201	C-7
D202	C-7
D203	C-7
IC101	C-2
IC102	B-3
IC201	A-7
IC202	C-6
IC203	B-5
Q104	B-4
Q105	B-4
Q106	C-2
Q201	A-7
Q202	C-7
Q203	B-7
Q204	B-7
Q205	B-7
Q206	A-4
Q207	A-4
Q208	B-7
Q209	B-7


POWER BLOCK
(MPN4801) (US, Canadian)
(MPN4901) (AEP, UK, Australian, PX)
(SWITCHING REGULATOR)
TM-125
(TURNTABLE MOTOR)
SE-122
(SENSOR)
AV-57
(AUDIO/VIDEO OUT)
ER-16
(AEP, UK)
(EURO AV)
IF-81
(INTERFACE CONTROL)
LM-63
(LOADING MOTOR)
FR-178
(FUNCTION SWITCH)
SW-353
(FUNCTION SWITCH)
FL-119
(FUNCTION SWITCH)
CN-142
(CONNECTION)
MB-98
(SIGNAL PROCESS, SERVO)

There are a few cases that the part isn't mounted in this model is printed on this diagram.

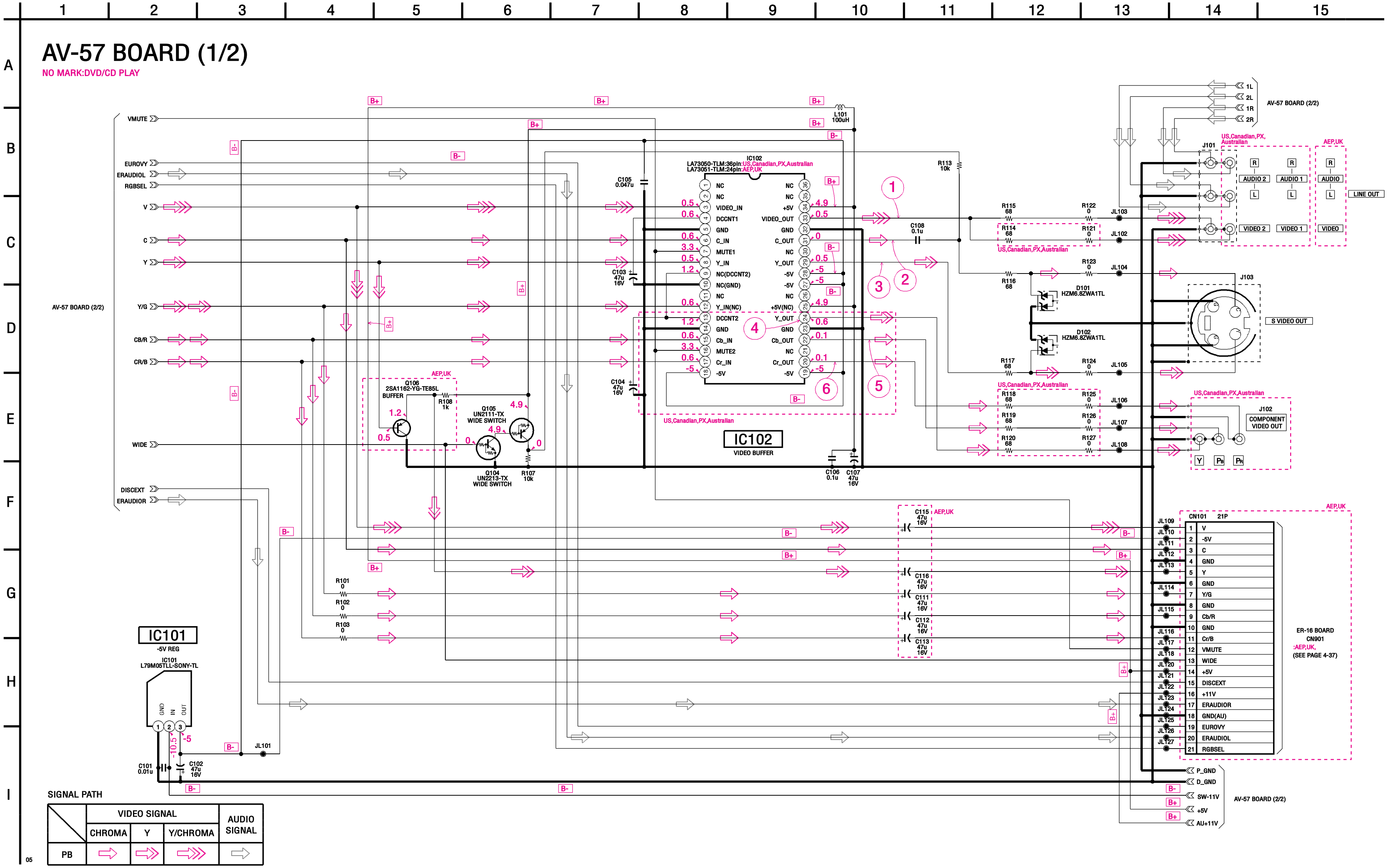
AV-57 (AUDIO/VIDEO OUT) PRINTED WIRING BOARD

– Ref. No.: AV-57 board; 1,000 series –


AV-57 BOARD
AEP,UK
US,Canadian,PX,Australian
LINE OUT
VIDEO
L
AUDIO
R
COMPONENT VIDEO OUT
Y
PB
PR
VIDEO 1
AUDIO 1
VIDEO 2
AUDIO 2
S VIDEO OUT
DIGITAL OUT
OPTICAL
COAXIAL
J102
J103
J101
IC201
J201
IC103
IC102
IC101
IC203
IC202
CN204
CN201
CN101
CN202
CN203
LP201
1-681-516-
A
B
C
D
05
1
2
3
4
5
6
7
8
11
21
(11)
(21)

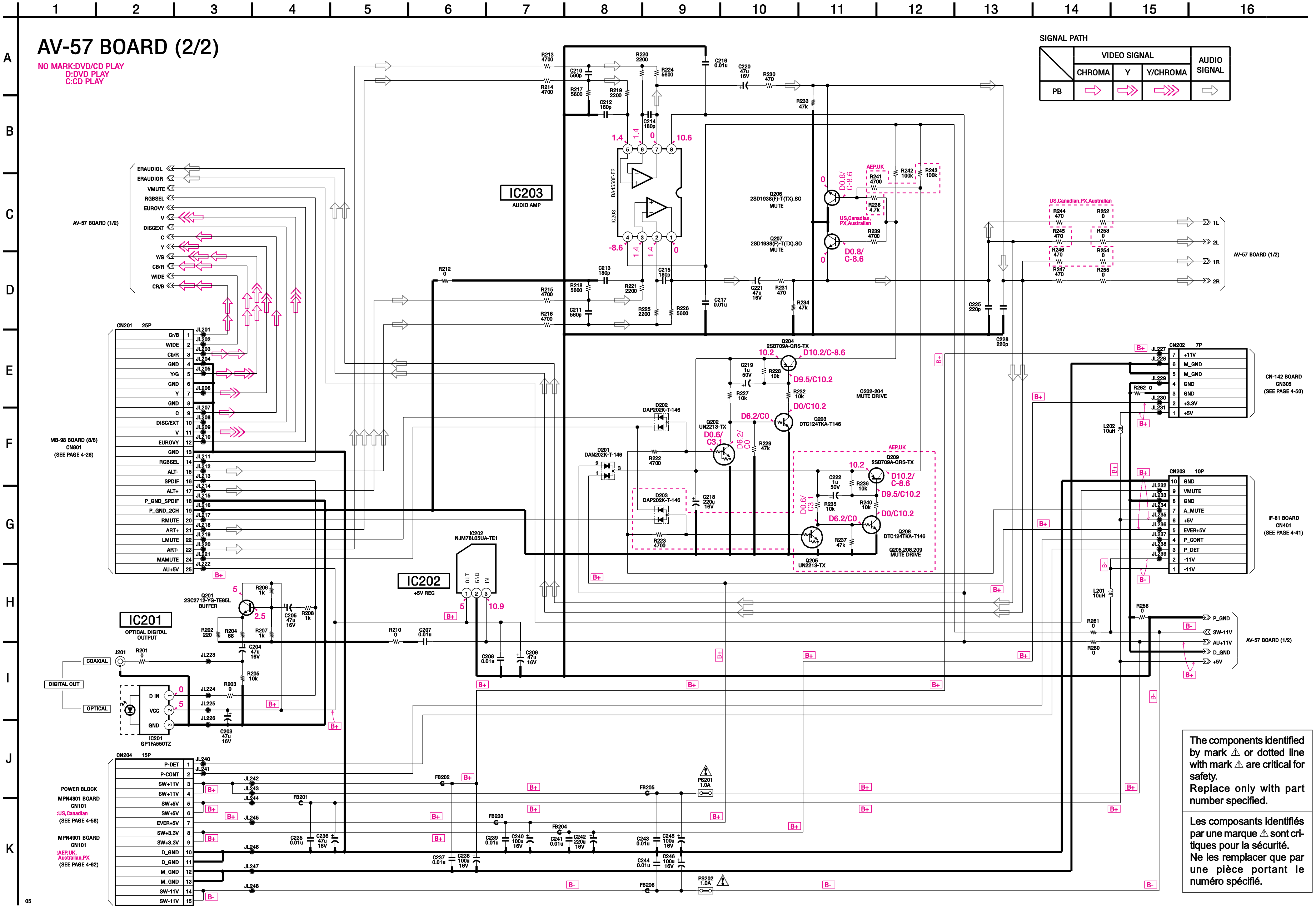
AV-57 (VIDEO BUFFER) SCHEMATIC DIAGRAM • **See page 4-29 for printed wiring board, and see page 4-28 for waveforms.**

– Ref. No.: AV-57 board; 1,000 series –


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
AV-57 BOARD (1/2)
NO MARK:DVD/CD PLAY
AV-57 BOARD (2/2)
VMUTE
EUROVY
ERAUDIOL
RGBSEL
V
C
Y
Y/G
CB/R
CR/B
WIDE
DISCEXT
ERAUDIOR
B+
B-
L101
100uH
C105
0.047u
C103
47u
16V
C104
47u
16V
IC102
LA73050-TLM:36pin:US,Canadian,PX,Australian
LA73051-TLM:24pin:AEP,UK
1 NC
2 NC
3 VIDEO_IN 0.5
4 DCCNT1 0.6
5 GND
6 C_IN 0.6
7 MUTE1 3.3
8 Y_IN 0.5
9 NC(DCCNT2) 1.2
10 NC(GND)
11 NC
12 Y_IN(NC) 0.6
13 DCCNT2 1.2
14 GND
15 Cb_IN 0.6
16 MUTE2 3.3
17 Cr_IN 0.6
18 -5V -5
36 NC
35 NC
34 +5V 4.9
33 VIDEO_OUT 0.5
32 GND
31 C_OUT 0
30 NC
29 Y_OUT 0.5
28 -5V -5
27 -5V -5
26 NC
25 +5V(NC) 4.9
24 Y_OUT 0.6
23 GND
22 Cb_OUT 0.1
21 NC
20 Cr_OUT 0.1
19 -5V -5
US,Canadian,PX,Australian
IC102
VIDEO BUFFER
C106
0.1u
C107
47u
16V
①
②
③
④
⑤
⑥
R113
10k
C108
0.1u
R115
68
R114
68
R116
68
R117
68
R118
68
R119
68
R120
68
R121
0
R122
0
R123
0
R124
0
R125
0
R126
0
R127
0
JL102
JL103
JL104
JL105
JL106
JL107
JL108
D101
HZM6.8ZWA1TL
D102
HZM6.8ZWA1TL
1L
2L
1R
2R
J101
US,Canadian,PX, Australian
AEP,UK
R
AUDIO 2
L
R
AUDIO 1
L
R
AUDIO
L
LINE OUT
VIDEO 2
VIDEO 1
VIDEO
J103
S VIDEO OUT
J102
COMPONENT VIDEO OUT
Y
PB
PR
AEP,UK
Q106
2SA1162-YG-TE85L
BUFFER
R108
1k
Q105
UN2111-TX
WIDE SWITCH
Q104
UN2213-TX
WIDE SWITCH
R107
10k
1.2
0.5
4.9
4.9
0
0
C115
47u
16V
C116
47u
16V
C111
47u
16V
C112
47u
16V
C113
47u
16V
R101
0
R102
0
R103
0
IC101
-5V REG
IC101
L79M05TLL-SONY-TL
GND
IN
OUT
1
2
3
-10.5
-5
JL101
C101
0.01u
C102
47u
16V
CN101 21P
1 V
2 -5V
3 C
4 GND
5 Y
6 GND
7 Y/G
8 GND
9 Cb/R
10 GND
11 Cr/B
12 VMUTE
13 WIDE
14 +5V
15 DISCEXT
16 +11V
17 ERAUDIOR
18 GND(AU)
19 EUROVY
20 ERAUDIOL
21 RGBSEL
JL109
JL110
JL111
JL112
JL113
JL114
JL115
JL116
JL117
JL118
JL120
JL121
JL122
JL123
JL124
JL125
JL126
JL127
ER-16 BOARD
CN901
:AEP,UK,
(SEE PAGE 4-37)
P_GND
D_GND
SW-11V
+5V
AU+11V
SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
AUDIO SIGNAL
PB
05

AV-57 (AUDIO AMP) SCHEMATIC DIAGRAM • See page 4-29 for printed wiring board.

– Ref. No.: AV-57 board; 1,000 series –


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
K
AV-57 BOARD (2/2)
NO MARK:DVD/CD PLAY
D:DVD PLAY
C:CD PLAY
IC203
AUDIO AMP
BA4558F-E2
IC202
NJM78L05UA-TE1
+5V REG
OUT GND IN
IC201
OPTICAL DIGITAL OUTPUT
IC201 GP1FA550TZ
D IN
VCC
GND
COAXIAL
DIGITAL OUT
OPTICAL
J201
Q201 2SC2712-YG-TE85L BUFFER
Q204 2SB709A-QRS-TX
Q202 UN2213-TX
Q203 DTC124TKA-T146
Q202-204 MUTE DRIVE
Q206 2SD1938(F)-T(TX).SO MUTE
Q207 2SD1938(F)-T(TX).SO MUTE
Q209 2SB709A-QRS-TX
Q208 DTC124TKA-T146
Q205 UN2213-TX
Q205,208,209 MUTE DRIVE
D201 DAN202K-T-146
D202 DAP202K-T-146
D203 DAP202K-T-146
AEP,UK
US,Canadian,PX,Australian
US,Canadian, PX,Australian
ERAUDIOL
ERAUDIOR
VMUTE
RGBSEL
EUROVY
V
DISCEXT
C
Y
Y/G
CB/R
WIDE
CR/B
AV-57 BOARD (1/2)
CN201 25P
Cr/B
WIDE
Cb/R
GND
Y/G
GND
Y
GND
C
DISC/EXT
V
EUROVY
GND
RGBSEL
ALT-
SPDIF
ALT+
P_GND_SPDIF
P_GND_2CH
RMUTE
ART+
LMUTE
ART-
MAMUTE
AU+5V
MB-98 BOARD (8/8) CN801 (SEE PAGE 4-26)
CN204 15P
P-DET
P-CONT
SW+11V
SW+11V
SW+5V
SW+5V
EVER+5V
SW+3.3V
SW+3.3V
D_GND
D_GND
M_GND
M_GND
SW-11V
SW-11V
POWER BLOCK
MPN4801 BOARD CN101 :US,Canadian (SEE PAGE 4-58)
MPN4901 BOARD CN101 :AEP,UK, Australian,PX (SEE PAGE 4-62)
CN202 7P
+11V
M_GND
M_GND
GND
+3.3V
+5V
CN-142 BOARD CN305 (SEE PAGE 4-50)
CN203 10P
GND
VMUTE
GND
A_MUTE
+5V
EVER+5V
P_CONT
P_DET
-11V
-11V
IF-81 BOARD CN401 (SEE PAGE 4-41)
1L
2L
1R
2R
P_GND
SW-11V
AU+11V
D_GND
+5V
FB201
FB202
FB203
FB204
FB205
FB206
PS201 1.0A
PS202 1.0A
L201 10uH
L202 10uH
B+
B-
1.4
0
10.6
-8.6
10.2
D10.2/C-8.6
D9.5/C10.2
D0/C10.2
D6.2/C0
D0.6/C3.1
D0.8/C-8.6
2.5
5
10.9
05

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	⇨	⇨⇨	⇨⇨⇨	⇨

SIGNAL PATH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

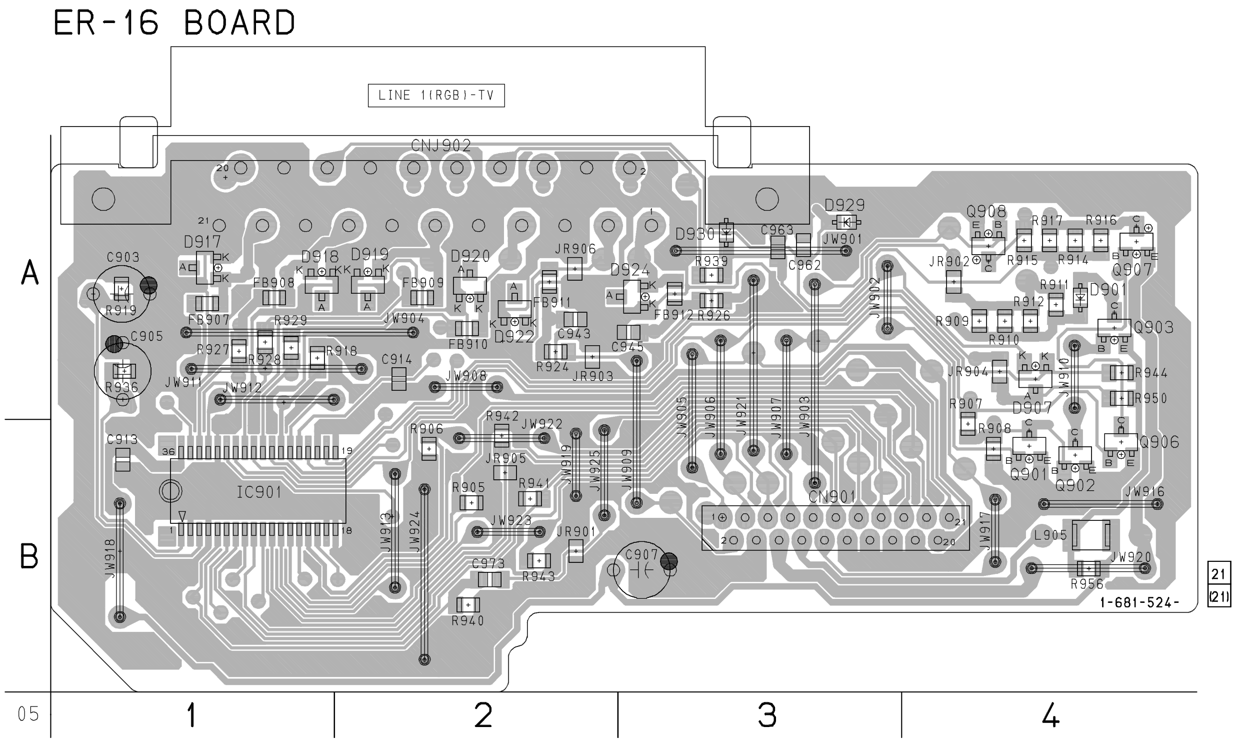
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

ER-16 (EURO AV) PRINTED WIRING BOARD

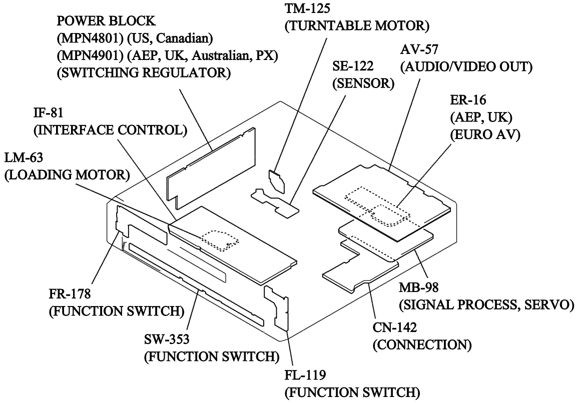
– Ref. No.: ER-16 board; 1,000 series –

– AEP, UK –

There are a few cases that the part isn't mounted in this model is printed on this diagram.

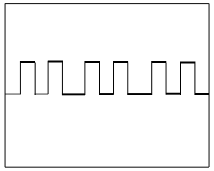

ER-16 BOARD
LINE 1(RGB)-TV
CNJ902
20
2
21
D917
D918
D919
D920
D924
D929
D930
D922
D901
D907
C903
C905
C913
C914
C943
C945
C962
C963
C907
C973
R919
R936
R927
R928
R929
R918
R906
R942
R905
R941
R943
R940
R924
R939
R926
R909
R910
R911
R912
R915
R914
R917
R916
R907
R908
R944
R950
R956
FB907
FB908
FB909
FB910
FB911
FB912
JR906
JR903
JR905
JR901
JR902
JR904
JW911
JW912
JW904
JW908
JW922
JW923
JW918
JW913
JW924
JW919
JW925
JW909
JW905
JW906
JW921
JW907
JW903
JW901
JW902
JW910
JW916
JW917
JW920
IC901
36
19
18
CN901
1
20
21
Q908
Q907
Q903
Q906
Q901
Q902
L905
A
B
1
2
3
4
05
1-681-524-
21
(21)

ER-16 BOARD	
CN901	B-3
D901	A-4
D907	A-4
D917	A-1
D918	A-1
D919	A-2
D920	A-2
D929	A-3
D930	A-3
IC901	B-1
Q901	B-4
Q902	B-4
Q903	A-4
Q906	B-4
Q907	A-4
Q908	A-4


POWER BLOCK
(MPN4801) (US, Canadian)
(MPN4901) (AEP, UK, Australian, PX)
(SWITCHING REGULATOR)
TM-125
(TURNTABLE MOTOR)
AV-57
(AUDIO/VIDEO OUT)
SE-122
(SENSOR)
ER-16
(AEP, UK)
(EURO AV)
IF-81
(INTERFACE CONTROL)
LM-63
(LOADING MOTOR)
FR-178
(FUNCTION SWITCH)
SW-353
(FUNCTION SWITCH)
FL-119
(FUNCTION SWITCH)
MB-98
(SIGNAL PROCESS, SERVO)
CN-142
(CONNECTION)

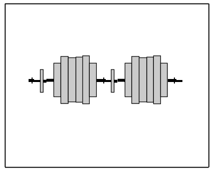
• Waveforms

❶ IC901 ㉞ (LINE : RGB mode)



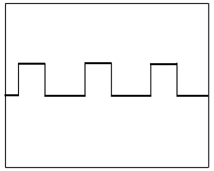
1.4 Vp-p (H)

❶ IC901 ㉞ (LINE : S VIDEO mode)



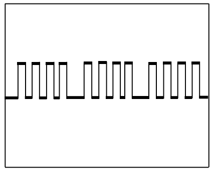
1.7 Vp-p (H)

❷ IC901 ㉙ (LINE : RGB mode)



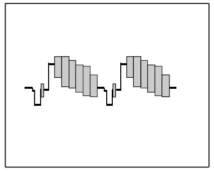
1.4 Vp-p (H)

❸ IC901 ㉗ (LINE : RGB mode)



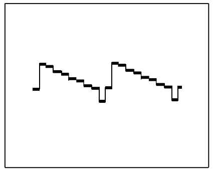
1.4 Vp-p (H)

❹ IC901 ㉕



2.4 Vp-p (H)

❹ IC901 ㉕ (LINE : S VIDEO mode)

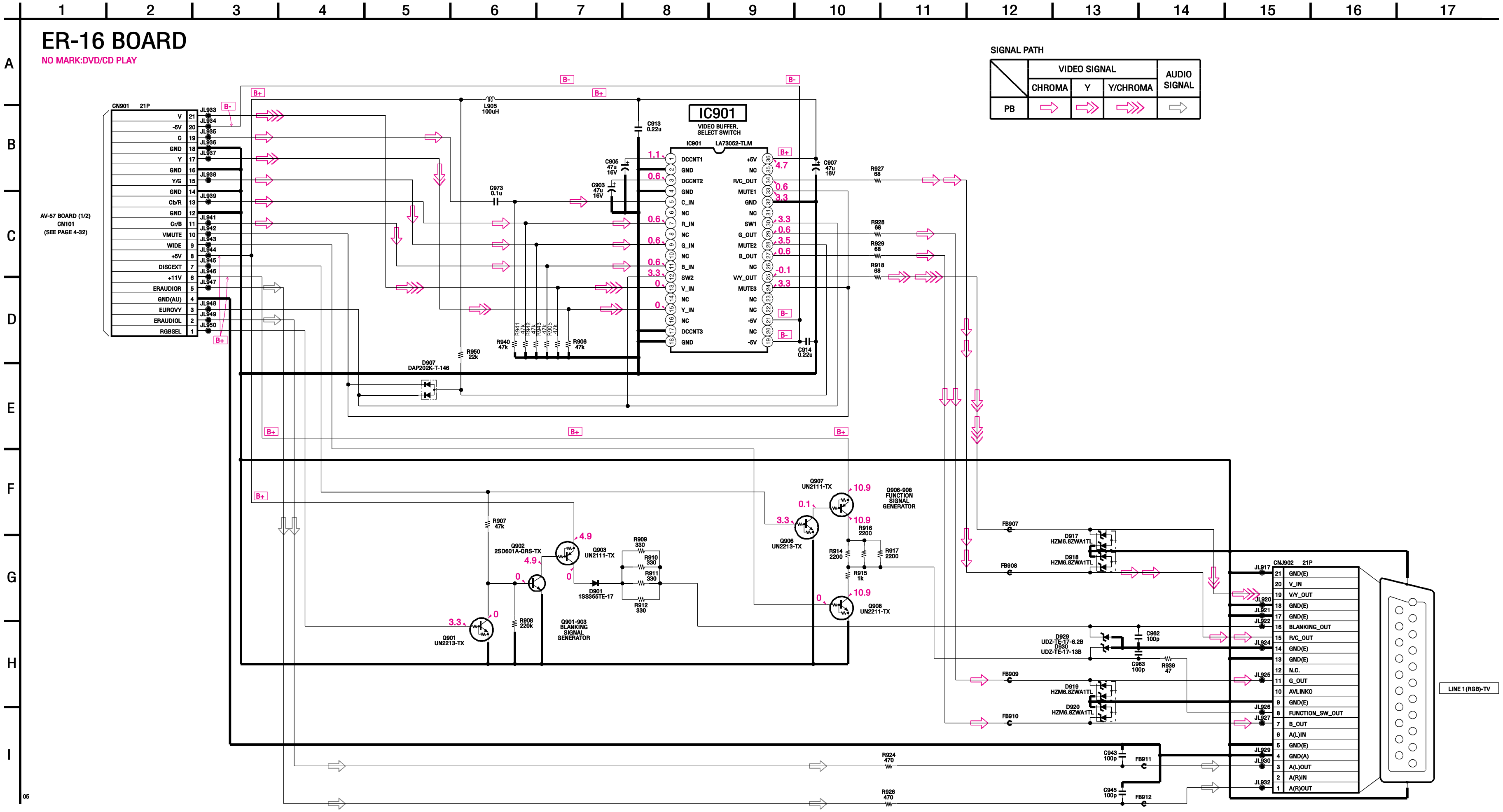


2.0 Vp-p (H)

ER-16 (EURO AV) SCHEMATIC DIAGRAM

– Ref. No.: ER-16 board; 1,000 series –

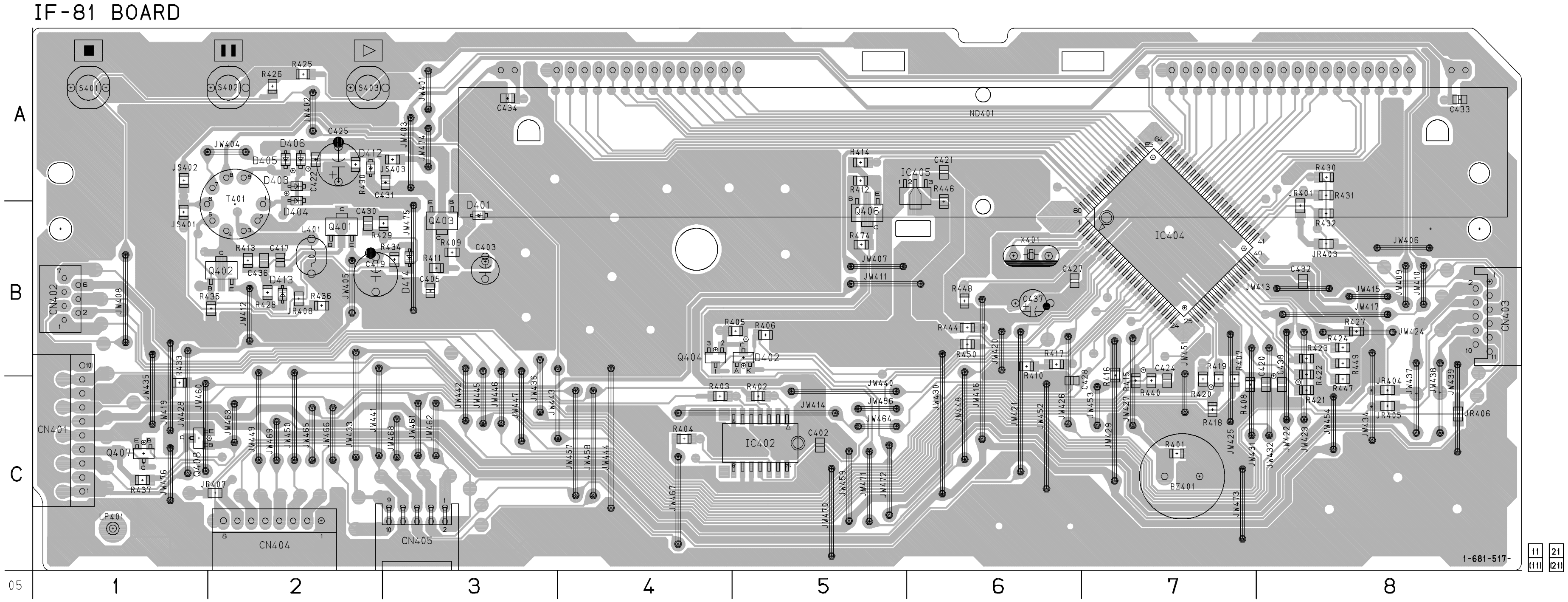
– AEP, UK –


ER-16 BOARD
NO MARK:DVD/CD PLAY
SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
AUDIO SIGNAL
PB
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
A
B
C
D
E
F
G
H
I
CN901 21P
V
-5V
C
GND
Y
GND
Y/G
GND
Cb/R
GND
Cr/B
VMUTE
WIDE
+5V
DISCEXT
+11V
ERAUDIOR
GND(AU)
EUROVY
ERAUDIOL
RGBSEL
JL933
JL934
JL935
JL936
JL937
JL938
JL939
JL941
JL942
JL943
JL944
JL945
JL946
JL947
JL948
JL949
JL950
AV-57 BOARD (1/2)
CN101
(SEE PAGE 4-32)
B+
B-
L905
100uH
C913
0.22u
C973
0.1u
C905
47u
16V
C903
47u
16V
IC901
VIDEO BUFFER,
SELECT SWITCH
IC901 LA73052-TLM
DCCNT1
GND
DCCNT2
GND
C_IN
NC
R_IN
NC
G_IN
NC
B_IN
SW2
V_IN
NC
Y_IN
NC
DCCNT3
GND
+5V
NC
R/C_OUT
MUTE1
GND
NC
SW1
G_OUT
MUTE2
B_OUT
NC
V/Y_OUT
MUTE3
NC
NC
-5V
NC
-5V
1.1
0.6
0.6
0.6
0.6
3.3
0
0
4.7
0.6
3.3
3.3
0.6
3.5
0.6
-0.1
3.3
C907
47u
16V
C914
0.22u
R927
68
R928
68
R929
68
R918
68
R940
47k
R941
47k
R942
47k
R943
47k
R905
47k
R906
47k
R950
22k
D907
DAP202K-T-146
Q907
UN2111-TX
Q906-908
FUNCTION
SIGNAL
GENERATOR
10.9
0.1
3.3
10.9
Q906
UN2213-TX
R916
2200
R914
2200
R917
2200
R915
1k
0
10.9
Q908
UN2211-TX
R907
47k
Q902
2SD601A-QRS-TX
4.9
4.9
Q903
UN2111-TX
0
0
R909
330
R910
330
R911
330
R912
330
D901
1SS355TE-17
3.3
0
Q901
UN2213-TX
R908
220k
Q901-903
BLANKING
SIGNAL
GENERATOR
FB907
D917
HZM6.8ZWA1TL
FB908
D918
HZM6.8ZWA1TL
D929
UDZ-TE-17-6.2B
D930
UDZ-TE-17-13B
C962
100p
C963
100p
R939
47
FB909
D919
HZM6.8ZWA1TL
FB910
D920
HZM6.8ZWA1TL
R924
470
C943
100p
FB911
R926
470
C945
100p
FB912
JL917
JL920
JL921
JL922
JL924
JL925
JL926
JL927
JL929
JL930
JL932
CNJ902 21P
GND(E)
V_IN
V/Y_OUT
GND(E)
GND(E)
BLANKING_OUT
R/C_OUT
GND(E)
GND(E)
N.C.
G_OUT
AVLINKO
GND(E)
FUNCTION_SW_OUT
B_OUT
A(L)IN
GND(E)
GND(A)
A(L)OUT
A(R)IN
A(R)OUT
LINE 1(RGB)-TV
05

IF-81 (INTERFACE CONTROL) PRINTED WIRING BOARD

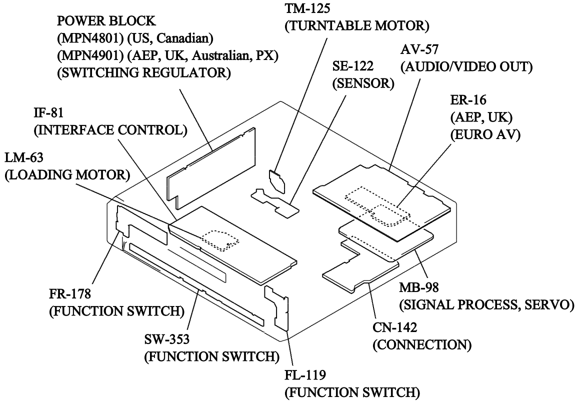
– Ref. No.: IF-81 board; 1,000 series –

There are a few cases that the part isn't mounted in this model is printed on this diagram.


IF-81 BOARD
A
B
C
1
2
3
4
5
6
7
8
05
S401
S402
S403
ND401
IC404
IC405
IC402
CN401
CN402
CN403
CN404
CN405
T401
Q401
Q402
Q403
Q404
Q406
Q407
Q408
X401
BZ401
LP401
1-681-517-
11
21
(11)
(21)

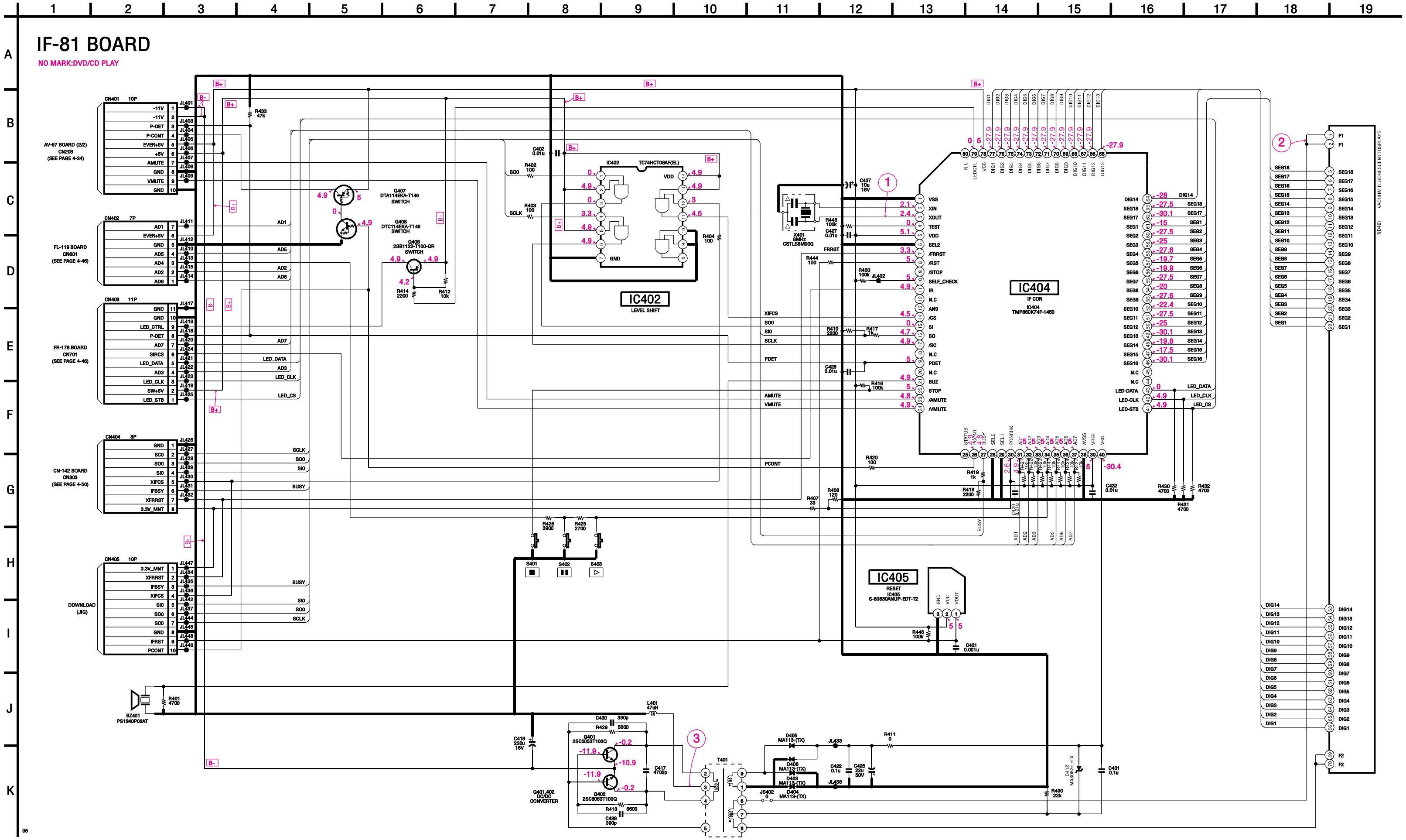
IF-81 BOARD

CN401	C-1
CN402	B-1
CN403	B-8
CN404	C-2
CN405	C-3
D403	B-2
D404	B-2
D405	A-2
D406	A-2
D412	A-3
IC402	C-5
IC404	B-7
IC405	A-5
Q401	B-2
Q402	B-2
Q406	B-5
Q407	C-1
Q408	C-1


POWER BLOCK
(MPN4801) (US, Canadian)
(MPN4901) (AEP, UK, Australian, PX)
(SWITCHING REGULATOR)
TM-125
(TURNTABLE MOTOR)
SE-122
(SENSOR)
AV-57
(AUDIO/VIDEO OUT)
ER-16
(AEP, UK)
(EURO AV)
IF-81
(INTERFACE CONTROL)
LM-63
(LOADING MOTOR)
FR-178
(FUNCTION SWITCH)
SW-353
(FUNCTION SWITCH)
FL-119
(FUNCTION SWITCH)
MB-98
(SIGNAL PROCESS, SERVO)
CN-142
(CONNECTION)

IF-81 (IF CON) SCHEMATIC DIAGRAM

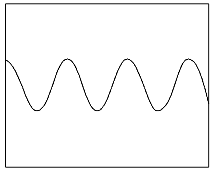
– Ref. No.: IF-81 board; 1,000 series –


IF-81 BOARD
NO MARK:DVD/CD PLAY
CN401 10P
AV-57 BOARD (2/2) CN203 (SEE PAGE 4-34)
CN402 7P
FL-119 BOARD CN601 (SEE PAGE 4-46)
CN403 11P
FR-178 BOARD CN701 (SEE PAGE 4-46)
CN404 8P
CN-142 BOARD CN303 (SEE PAGE 4-50)
CN405 10P
DOWNLOAD (JIG)
Q407 DTA114EKA-T146 SWITCH
Q408 DTC114EKA-T146 SWITCH
Q406 2SB1132-T100-QR SWITCH
IC402 TC74HCT08AF(EL)
IC402 LEVEL SHIFT
IC404 IF CON
IC404 TMP86CK74F-1450
IC405 RESET
IC405 S-80830ANUP-EDT-T2
X401 8MHz CSTLS8M00G
Q401,402 DC/DC CONVERTER
Q401 2SC5053T100Q
Q402 2SC5053T100Q
T401
L401 47uH
BZ401 PS1240P02AT
S401
S402
S403
ND401 FLUORESCENT DISPLAY
B+
B-
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
A
B
C
D
E
F
G
H
I
J
K

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

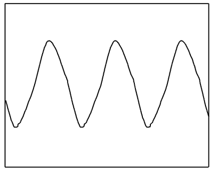
• Waveforms

❶ IC404 ③



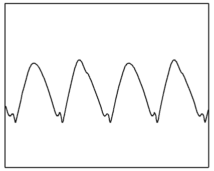
5 Vp-p (8 MHz)

❷ ND401 ①, ②



8 Vp-p (200 kHz)

❸ T401 ③

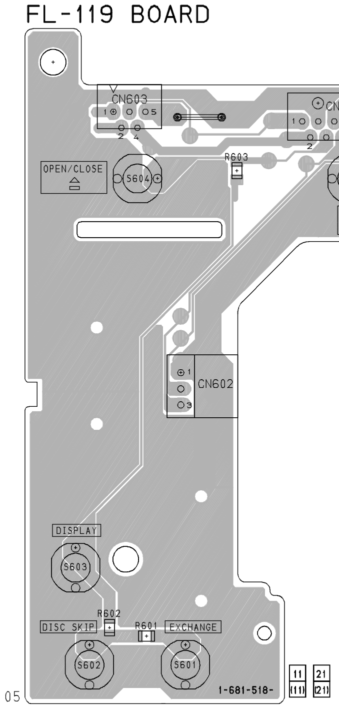


20 Vp-p (409 kHz)

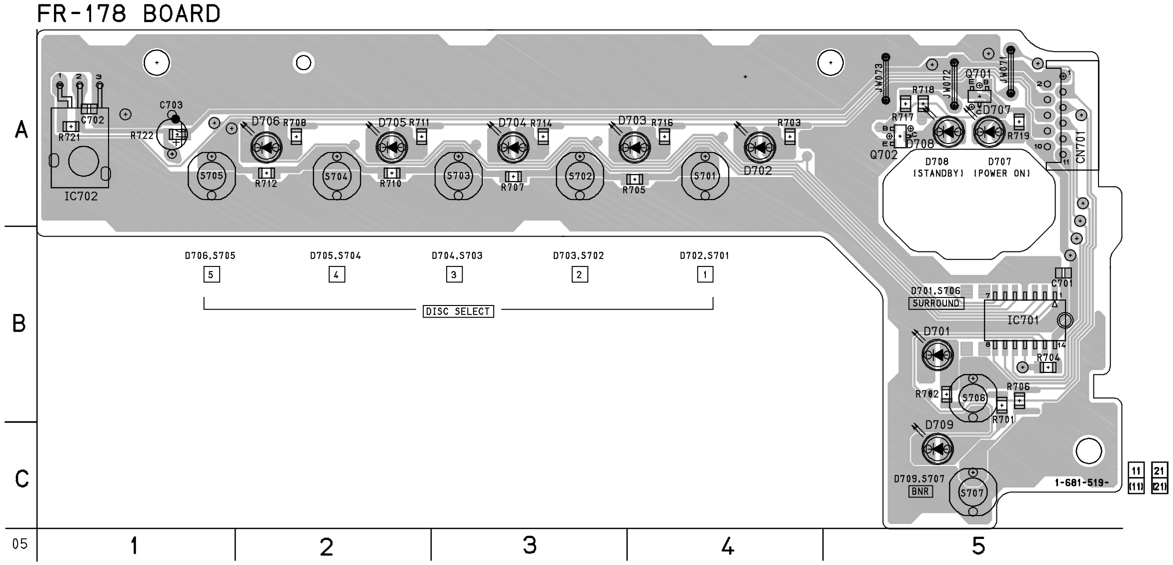
FL-119 (FUNCTION SWITCH), FR-178 (FUNCTION SWITCH), SW-353 (FUNCTION SWITCH) PRINTED WIRING BOARDS

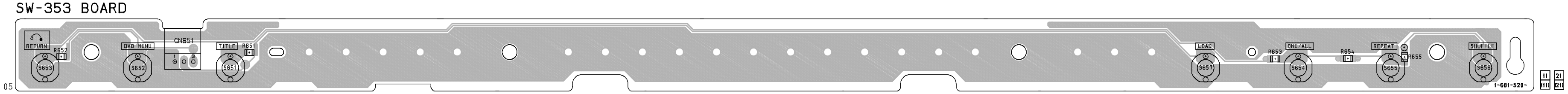
– Ref. No.: FL-119 board, FR-178 board and SW-353 board; 3,000 series –

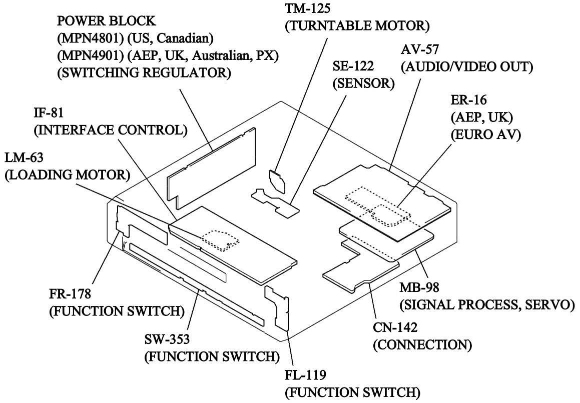
There are a few cases that the part isn't mounted in this model is printed on this diagram.


FL-119 BOARD
CN603
CN601
R604
R603
OPEN/CLOSE
S604
S605
S606
NEXT
PREV
CN602
DISPLAY
S603
R602
R601
DISC SKIP
EXCHANGE
S602
S601
1-681-518-
11 (11) 21 (21)
05

FR-178 BOARD	
CN701	A-5
D701	B-5
D702	A-4
D703	A-4
D704	A-3
D705	A-2
D706	A-2
D707	A-5
D708	A-5
D709	C-5
IC701	B-5
IC702	A-1
Q701	A-5
Q702	A-5

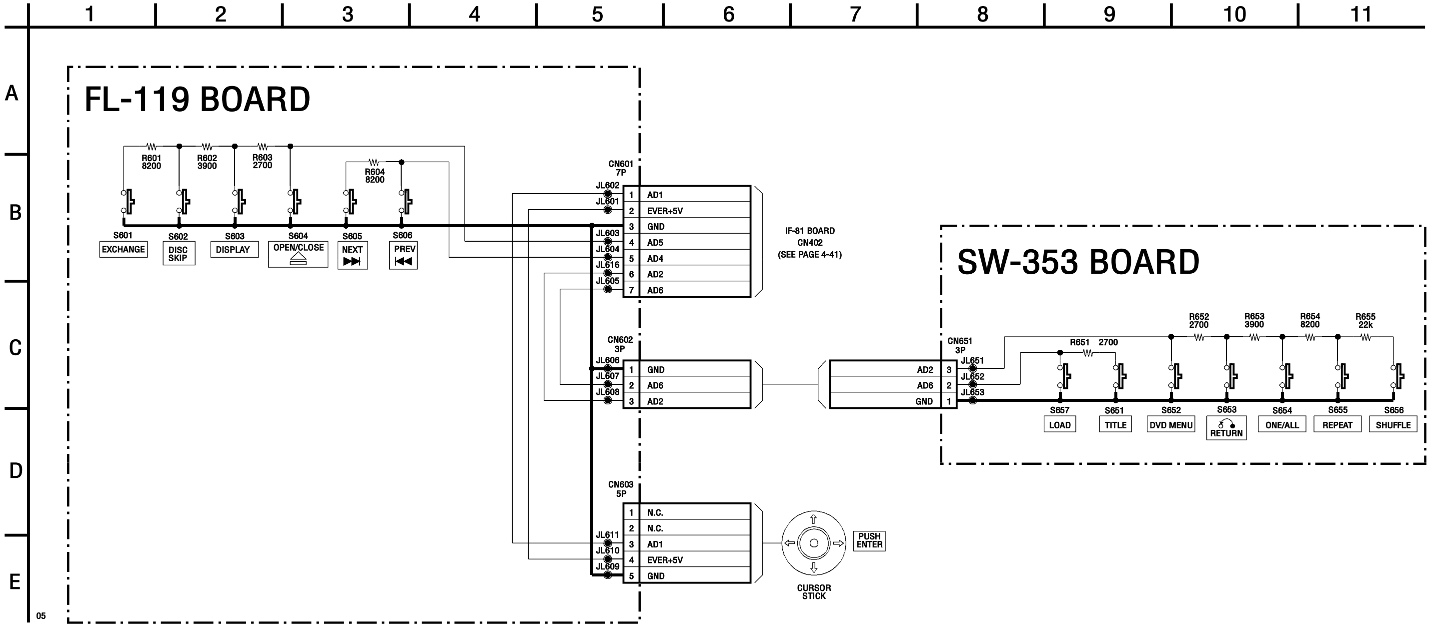

FR-178 BOARD
IC702
R721
C702
C703
R722
D706
R708
D705
R711
D704
R714
D703
R716
R703
S705
R712
S704
R710
S703
R707
S702
R705
S701
D702
Q701
R718
R717
D707
R719
Q702
D708
D708 (STANDBY)
D707 (POWER ON)
CN701
D706,S705
D705,S704
D704,S703
D703,S702
D702,S701
DISC SELECT
D701,S706
SURROUND
C701
IC701
R704
D701
R702
S706
R706
R701
D709
D709,S707
BNR
S707
1-681-519-
11 (11) 21 (21)
A
B
C
05
1
2
3
4
5


SW-353 BOARD
RETURN
R652
S653
DVD MENU
S652
CN651
TITLE
R651
S651
LOAD
S657
R659
ONE/ALL
S654
R654
REPEAT
R655
S655
SHUFFLE
S656
1-681-520-
11 (11) 21 (21)
05

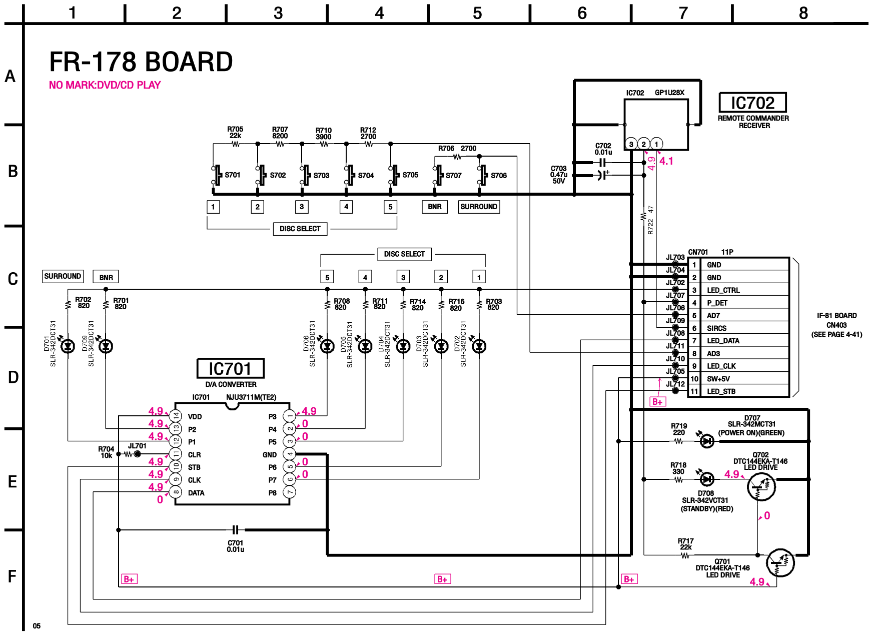

POWER BLOCK
(MPN4801) (US, Canadian)
(MPN4901) (AEP, UK, Australian, PX)
(SWITCHING REGULATOR)
TM-125
(TURNTABLE MOTOR)
SE-122
(SENSOR)
AV-57
(AUDIO/VIDEO OUT)
ER-16
(AEP, UK)
(EURO AV)
IF-81
(INTERFACE CONTROL)
LM-63
(LOADING MOTOR)
FR-178
(FUNCTION SWITCH)
SW-353
(FUNCTION SWITCH)
FL-119
(FUNCTION SWITCH)
MB-98
(SIGNAL PROCESS, SERVO)
CN-142
(CONNECTION)

FL-119 (FUNCTION SWITCH), FR-178 (FUNCTION SWITCH), SW-353 (FUNCTION SWITCH) SCHEMATIC DIAGRAM

– Ref. No.: FL-119 board, FR-178 board and SW-353 board; 3,000 series –



1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
FL-119 BOARD
R601 8200
R602 3900
R603 2700
R604 8200
S601 EXCHANGE
S602 DISC SKIP
S603 DISPLAY
S604 OPEN/CLOSE
S605 NEXT
S606 PREV
CN601 7P
JL602
JL601
JL603
JL604
JL616
JL605
1 AD1
2 EVER+5V
3 GND
4 AD5
5 AD4
6 AD2
7 AD6
IF-81 BOARD CN402 (SEE PAGE 4-41)
CN602 3P
JL606
JL607
JL608
1 GND
2 AD6
3 AD2
CN603 5P
1 N.C.
2 N.C.
JL611
3 AD1
JL610
4 EVER+5V
JL609
5 GND
CURSOR STICK
PUSH ENTER
05
SW-353 BOARD
R652 2700
R653 3900
R654 8200
R655 22k
R651 2700
CN651 3P
JL651
JL652
JL653
3 AD2
2 AD6
1 GND
S657 LOAD
S651 TITLE
S652 DVD MENU
S653 RETURN
S654 ONE/ALL
S655 REPEAT
S656 SHUFFLE

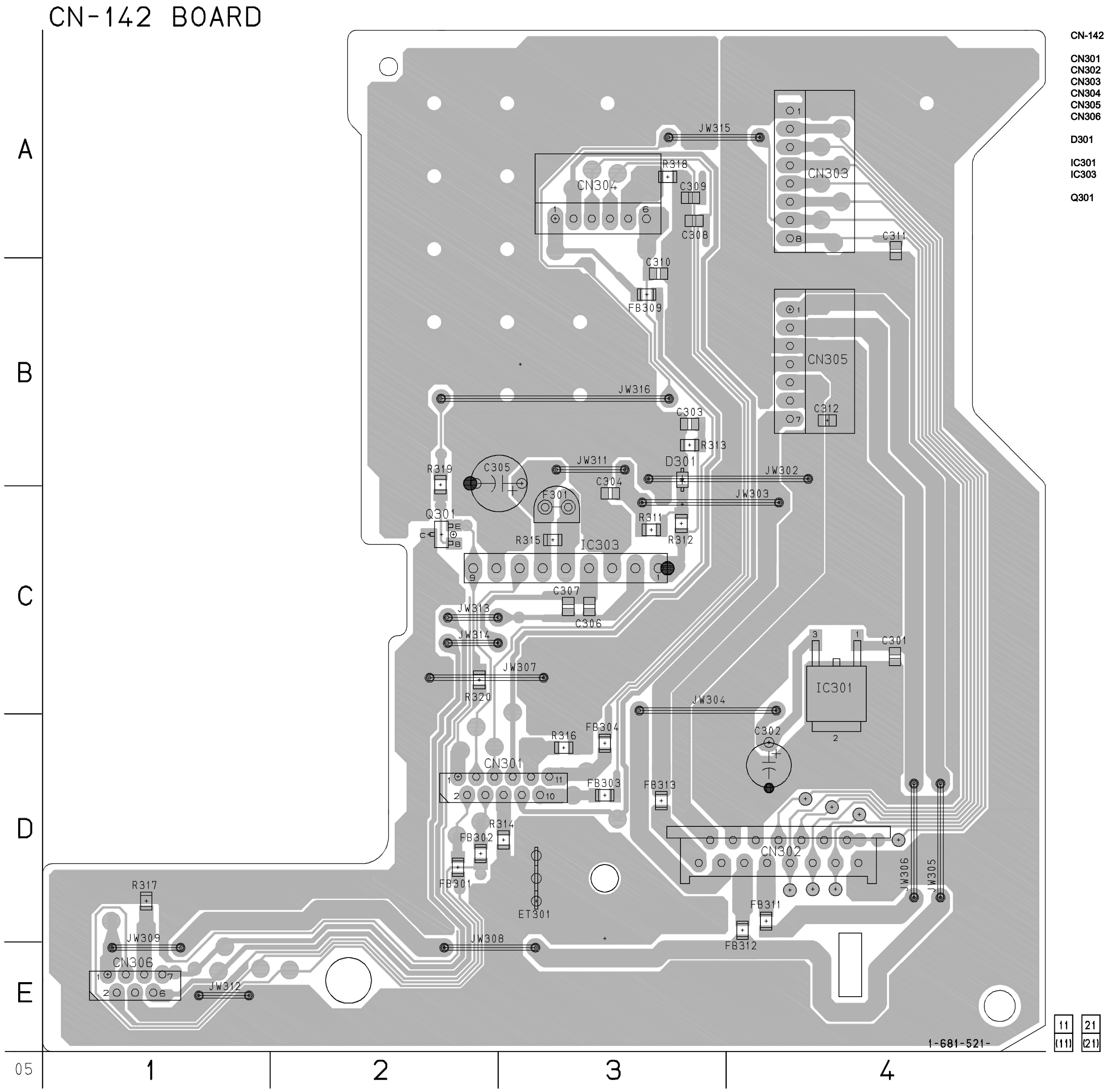


1
2
3
4
5
6
7
8
A
B
C
D
E
F
FR-178 BOARD
NO MARK:DVD/CD PLAY
R705 22k
R707 8200
R710 3900
R712 2700
R706 2700
S701
S702
S703
S704
S705
S707
S706
1
2
3
4
5
BNR
SURROUND
DISC SELECT
C702 0.01u
C703 0.47u 50V
IC702 GP1U28X
IC702
REMOTE COMMANDER RECEIVER
4.9
4.1
R722 47
CN701 11P
JL703 1 GND
JL704 2 GND
JL702 3 LED_CTRL
JL707 4 P_DET
JL706 5 AD7
JL709 6 SIRCS
JL708 7 LED_DATA
JL711 8 AD3
JL710 9 LED_CLK
JL705 10 SW+5V
JL712 11 LED_STB
IF-81 BOARD CN403 (SEE PAGE 4-41)
B+
SURROUND
BNR
DISC SELECT
5
4
3
2
1
R702 820
R701 820
R708 820
R711 820
R714 820
R716 820
R703 820
D701 SLR-342DCT31
D709 SLR-342DCT31
D706 SLR-342DCT31
D705 SLR-342DCT31
D704 SLR-342DCT31
D703 SLR-342DCT31
D702 SLR-342DCT31
IC701
D/A CONVERTER
IC701 NJU3711M(TE2)
4.9 14 VDD
4.9 13 P2
4.9 12 P1
11 CLR
4.9 10 STB
4.9 9 CLK
4.9 8 DATA
0
P3 1 4.9
P4 2 0
P5 3 0
GND 4
P6 5 0
P7 6 0
P8 7
R704 10k
JL701
C701 0.01u
B+
B+
B+
R719 220
D707 SLR-342MCT31 (POWER ON)(GREEN)
R718 330
D708 SLR-342VCT31 (STANDBY)(RED)
Q702 DTC144EKA-T146 LED DRIVE
4.9
0
R717 22k
Q701 DTC144EKA-T146 LED DRIVE
4.9
05

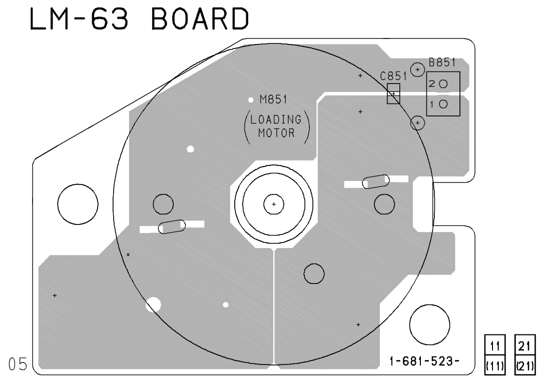
CN-142 (CONNECTION), LM-63 (LOADING MOTOR) PRINTED WIRING BOARDS

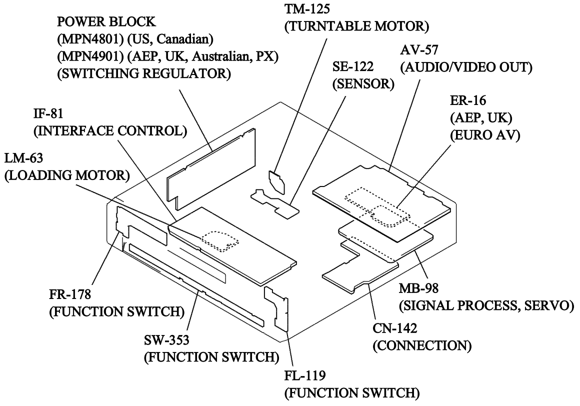
– Ref. No.: CN-142 board, LM-63 board; 1,000 series –

There are a few cases that the part isn't mounted in this model is printed on this diagram.


CN-142 BOARD
A
B
C
D
E
1
2
3
4
05
JW315
R318
C309
CN304
C308
CN303
C311
C310
FB309
CN305
JW316
C303
C312
R313
R319
C305
JW311
D301
JW302
C304
F301
JW303
Q301
R311
R315
IC303
R312
C307
C306
JW313
JW314
JW307
C301
IC301
R320
JW304
C302
R316
FB304
CN301
FB303
FB313
R314
FB302
CN302
FB301
ET301
JW306
JW305
R317
FB311
JW309
JW308
FB312
CN306
JW312
1-681-521-
11
21
(11)
(21)

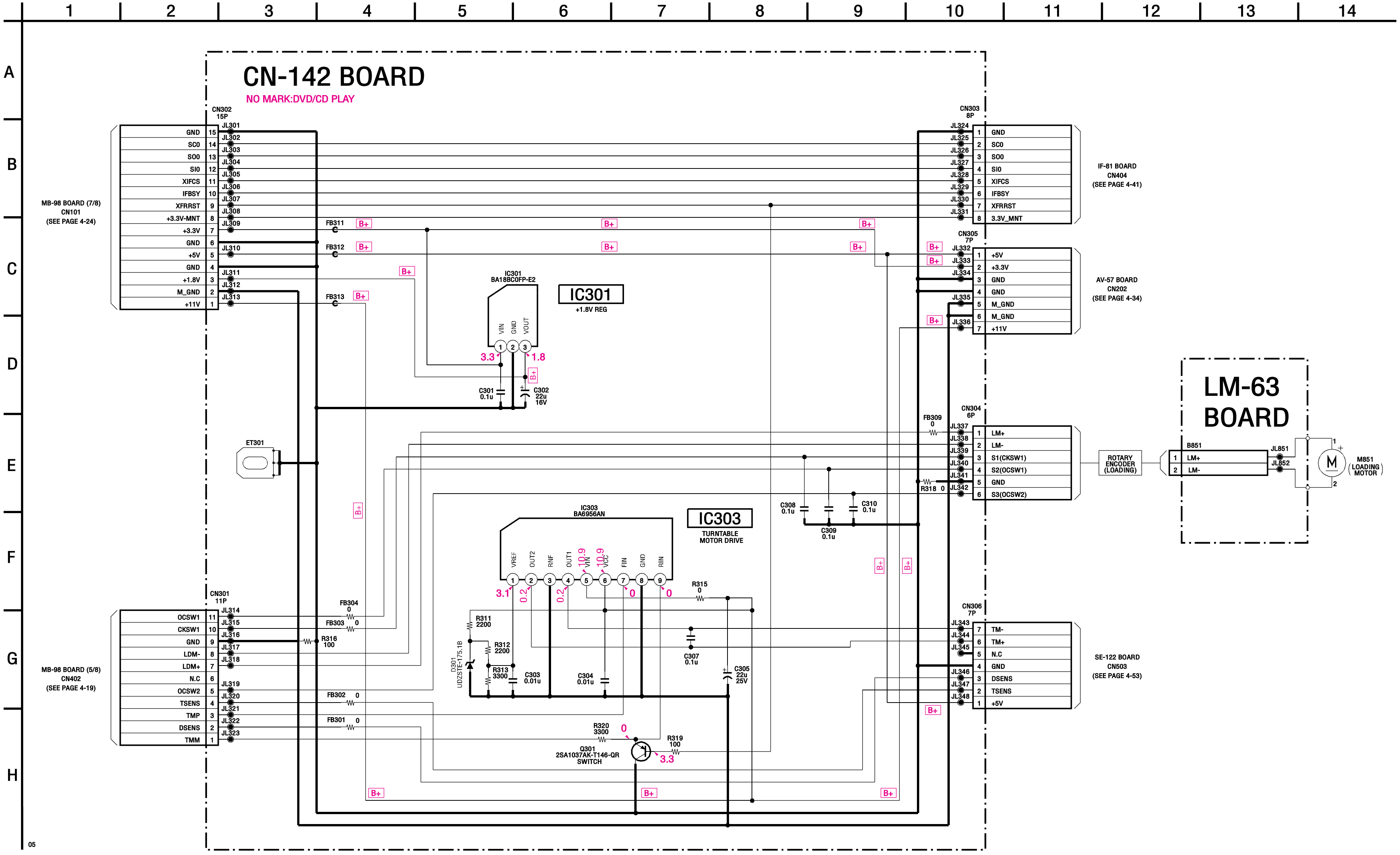
CN-142 BOARD	
CN301	D-3
CN302	D-4
CN303	A-4
CN304	A-3
CN305	B-4
CN306	E-1
D301	C-3
IC301	C-4
IC303	C-3
Q301	C-2


LM-63 BOARD
B851
C851
M851
(LOADING MOTOR)
05
1-681-523-
11
21
(11)
(21)


POWER BLOCK
(MPN4801) (US, Canadian)
(MPN4901) (AEP, UK, Australian, PX)
(SWITCHING REGULATOR)
TM-125
(TURNTABLE MOTOR)
AV-57
(AUDIO/VIDEO OUT)
SE-122
(SENSOR)
ER-16
(AEP, UK)
(EURO AV)
IF-81
(INTERFACE CONTROL)
LM-63
(LOADING MOTOR)
FR-178
(FUNCTION SWITCH)
SW-353
(FUNCTION SWITCH)
FL-119
(FUNCTION SWITCH)
CN-142
(CONNECTION)
MB-98
(SIGNAL PROCESS, SERVO)

CN-142 (CONNECTION), LM-63 (LOADING MOTOR) SCHEMATIC DIAGRAM

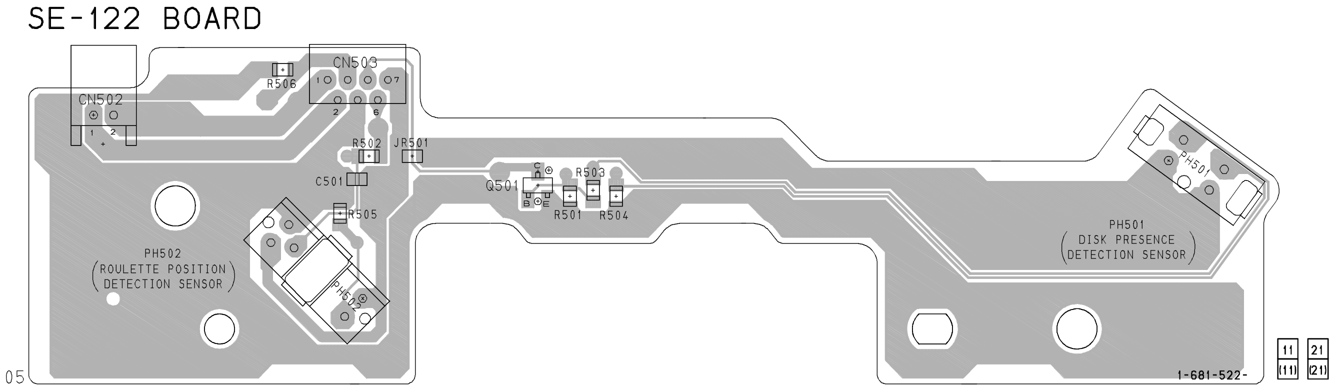
– Ref. No.: CN-142 board, LM-63 board; 1,000 series –

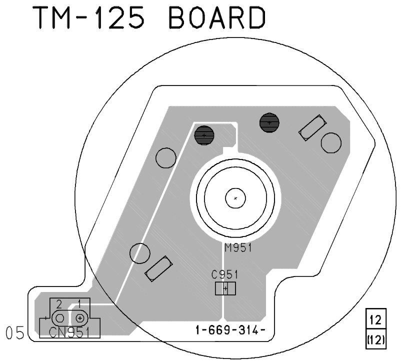

1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
H
CN-142 BOARD
NO MARK:DVD/CD PLAY
CN302
15P
GND 15
SCO 14
SOO 13
SIO 12
XIFCS 11
IFBSY 10
XFRRST 9
+3.3V-MNT 8
+3.3V 7
GND 6
+5V 5
GND 4
+1.8V 3
M_GND 2
+11V 1
JL301
JL302
JL303
JL304
JL305
JL306
JL307
JL308
JL309
JL310
JL311
JL312
JL313
MB-98 BOARD (7/8)
CN101
(SEE PAGE 4-24)
FB311
FB312
FB313
B+
IC301
BA18BC0FP-E2
IC301
+1.8V REG
VIN
GND
VOUT
3.3
1.8
C301
0.1u
C302
22u
16V
CN303
8P
JL324
JL325
JL326
JL327
JL328
JL329
JL330
JL331
1 GND
2 SCO
3 SOO
4 SIO
5 XIFCS
6 IFBSY
7 XFRRST
8 3.3V_MNT
IF-81 BOARD
CN404
(SEE PAGE 4-41)
CN305
7P
JL332
JL333
JL334
JL335
JL336
1 +5V
2 +3.3V
3 GND
4 GND
5 M_GND
6 M_GND
7 +11V
AV-57 BOARD
CN202
(SEE PAGE 4-34)
ET301
CN304
6P
FB309
0
JL337
JL338
JL339
JL340
JL341
JL342
R318 0
1 LM+
2 LM-
3 S1(CKSW1)
4 S2(OCSW1)
5 GND
6 S3(OCSW2)
C308
0.1u
C309
0.1u
C310
0.1u
ROTARY
ENCODER
(LOADING)
LM-63
BOARD
B851
1 LM+
2 LM-
JL851
JL852
M851
(LOADING
MOTOR)
IC303
BA6956AN
IC303
TURNTABLE
MOTOR DRIVE
VREF
OUT2
RNF
OUT1
VIN
VCC
FIN
GND
RIN
3.1
0.2
0.2
10.9
10.9
0
0
R315
0
R311
2200
R312
2200
R313
3300
D301
UDZSTE-175.1B
C303
0.01u
C304
0.01u
C307
0.1u
C305
22u
25V
CN301
11P
OCSW1 11
CKSW1 10
GND 9
LDM- 8
LDM+ 7
N.C 6
OCSW2 5
TSENS 4
TMP 3
DSENS 2
TMM 1
JL314
JL315
JL316
JL317
JL318
JL319
JL320
JL321
JL322
JL323
MB-98 BOARD (5/8)
CN402
(SEE PAGE 4-19)
FB304
0
FB303 0
R316
100
FB302 0
FB301 0
R320
3300
0
R319
100
Q301
2SA1037AK-T146-QR
SWITCH
3.3
CN306
7P
JL343
JL344
JL345
JL346
JL347
JL348
7 TM-
6 TM+
5 N.C
4 GND
3 DSENS
2 TSENS
1 +5V
SE-122 BOARD
CN503
(SEE PAGE 4-53)
05

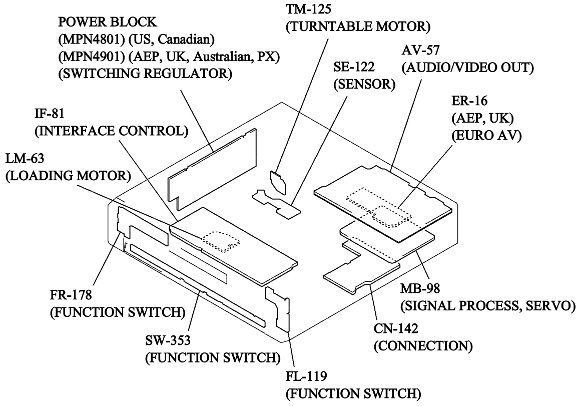
SE-122 (SENSOR), TM-125 (TURNTABLE MOTOR) PRINTED WIRING BOARDS

– Ref. No.: SE-122 board, TM-125 board; 1,000 series –

There are a few cases that the part isn't mounted in this model is printed on this diagram.

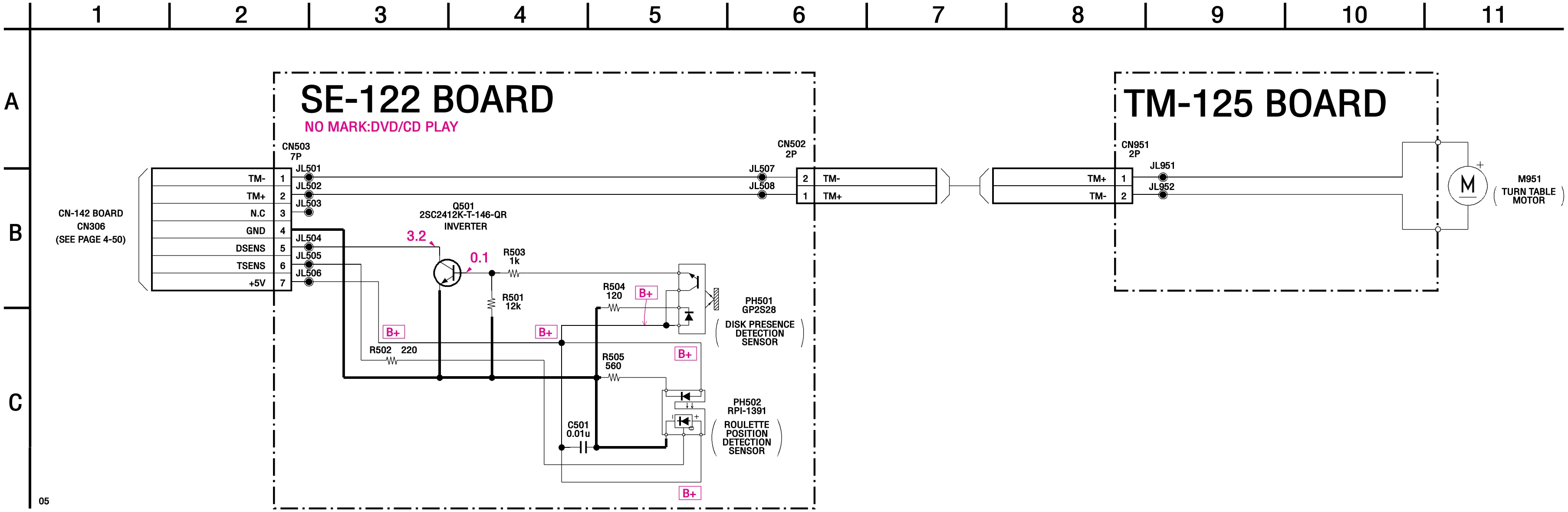

SE-122 BOARD
CN502
R506
CN503
1
7
2
6
R502
JR501
C501
R505
Q501
C
B
E
R503
R501
R504
PH501
PH501
(DISK PRESENCE DETECTION SENSOR)
PH502
(ROULETTE POSITION DETECTION SENSOR)
PH502
05
1-681-522-
11
21
(11)
(21)


TM-125 BOARD
M951
C951
2
CN951
05
1-669-314-
12
(12)


POWER BLOCK
(MPN4801) (US, Canadian)
(MPN4901) (AEP, UK, Australian, PX)
(SWITCHING REGULATOR)
TM-125
(TURNTABLE MOTOR)
SE-122
(SENSOR)
AV-57
(AUDIO/VIDEO OUT)
ER-16
(AEP, UK)
(EURO AV)
IF-81
(INTERFACE CONTROL)
LM-63
(LOADING MOTOR)
FR-178
(FUNCTION SWITCH)
SW-353
(FUNCTION SWITCH)
FL-119
(FUNCTION SWITCH)
MB-98
(SIGNAL PROCESS, SERVO)
CN-142
(CONNECTION)

SE-122 (SENSOR), TM-125 (TURNTABLE MOTOR) SCHEMATIC DIAGRAM

– Ref. No.: SE-122 board, TM-125 board; 1,000 series –


1
2
3
4
5
6
7
8
9
10
11
A
B
C
SE-122 BOARD
NO MARK:DVD/CD PLAY
CN-142 BOARD
CN306
(SEE PAGE 4-50)
CN503
7P
TM-
TM+
N.C
GND
DSENS
TSENS
+5V
JL501
JL502
JL503
JL504
JL505
JL506
Q501
2SC2412K-T-146-QR
INVERTER
3.2
0.1
R503
1k
R501
12k
R502 220
R504
120
R505
560
C501
0.01u
B+
PH501
GP2S28
DISK PRESENCE
DETECTION
SENSOR
PH502
RPI-1391
ROULETTE
POSITION
DETECTION
SENSOR
CN502
2P
JL507
JL508
TM-
TM+
TM-125 BOARD
CN951
2P
TM+
TM-
JL951
JL952
M
M951
TURN TABLE
MOTOR
05

MPN4801 (SWITCHING REGULATOR) PRINTED WIRING BOARD

– Ref. No.: MPN4801 board; 4,000 series –

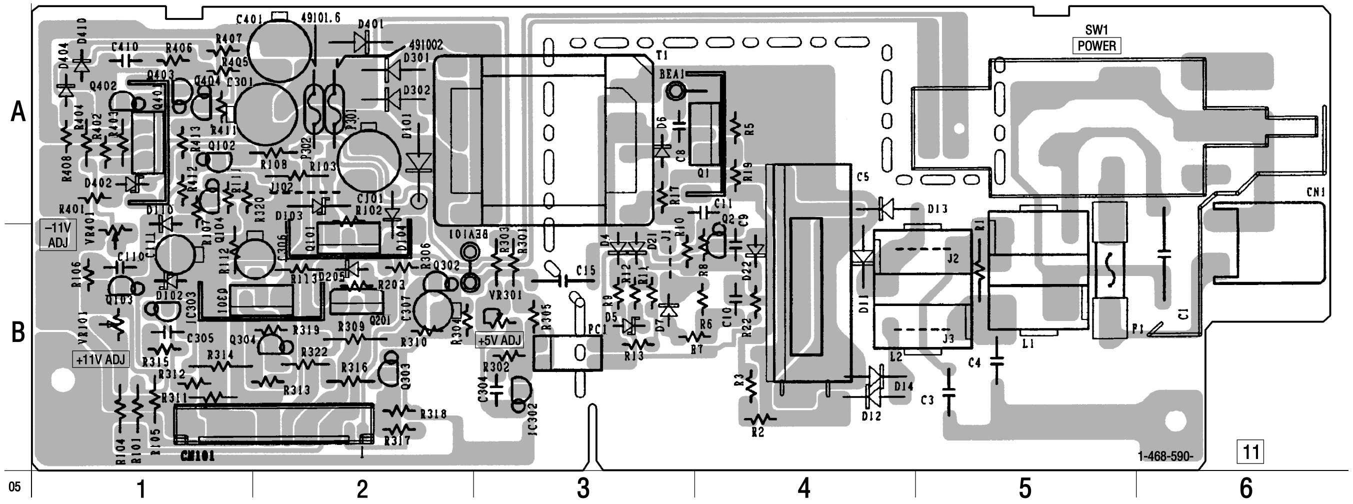
– US, CND –

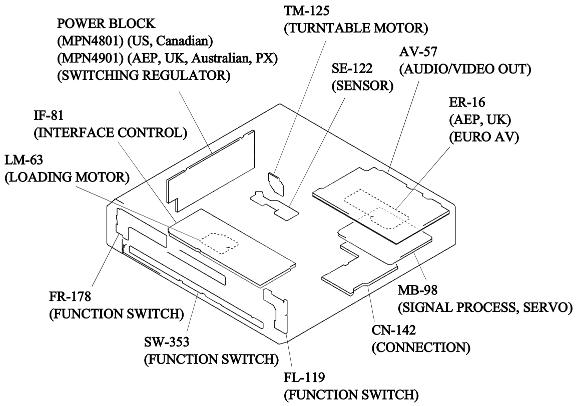
There are a few cases that the part isn't mounted in this model is printed on this diagram.

MPN4801 BOARD

MPN4801BOARD

CN1	A-6
CN101	B-1
D4	B-3
D5	B-3
D6	A-3
D7	B-3
D11	B-4
D12	B-4
D13	A-4
D14	B-3
D21	B-3
D22	B-4
D101	A-2
D102	B-1
D103	B-2
D104	B-2
D110	B-1
D205	B-2
D301	A-2
D302	A-2
D401	A-2
D402	A-1
D404	A-1
D410	A-1
IC302	B-3
IC303	B-1
Q1	A-4
Q2	B-4
Q101	B-2
Q102	A-1
Q103	B-1
Q104	B-1
Q201	B-2
Q301	B-1
Q302	B-2
Q303	B-2
Q304	B-2
Q401	A-1
Q402	A-1
Q403	A-1


A
B
1
2
3
4
5
6
05
-11V ADJ
+11V ADJ
+5V ADJ
SW1
POWER
CN1
CN101
T1
PC1
VR101
VR301
VR401
C401
C410
C301
C5
C3
C4
C1
J2
J3
L1
L2
F1
1-468-590-
11

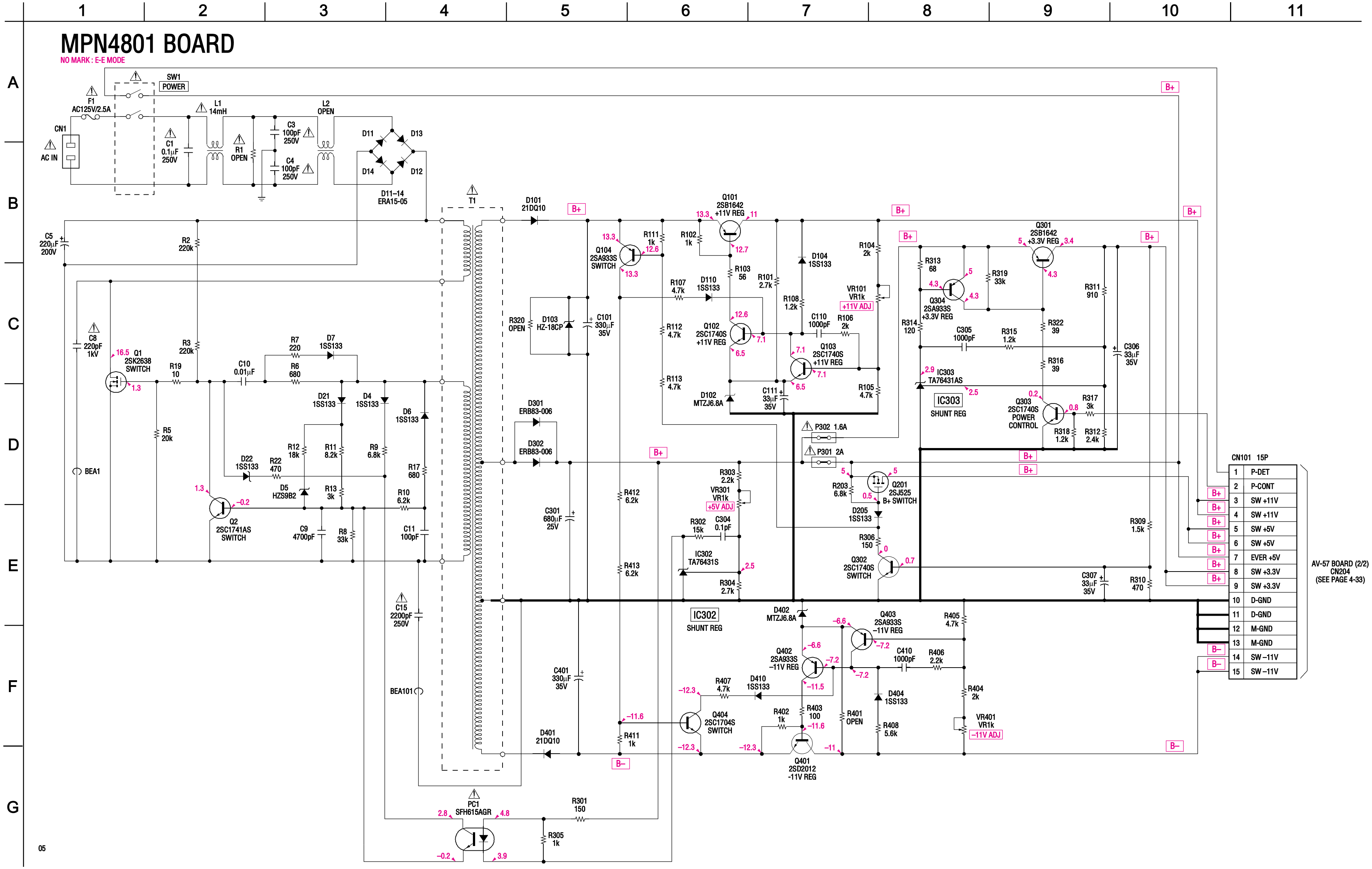

POWER BLOCK
(MPN4801) (US, Canadian)
(MPN4901) (AEP, UK, Australian, PX)
(SWITCHING REGULATOR)
TM-125
(TURNTABLE MOTOR)
AV-57
(AUDIO/VIDEO OUT)
SE-122
(SENSOR)
ER-16
(AEP, UK)
(EURO AV)
IF-81
(INTERFACE CONTROL)
LM-63
(LOADING MOTOR)
FR-178
(FUNCTION SWITCH)
SW-353
(FUNCTION SWITCH)
FL-119
(FUNCTION SWITCH)
CN-142
(CONNECTION)
MB-98
(SIGNAL PROCESS, SERVO)

MPN4801 (SWITCHING REGULATOR) SCHEMATIC DIAGRAM

– Ref. No.: MPN4801 board; 4,000 series –

– US, CND –

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.


1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
MPN4801 BOARD
NO MARK : E-E MODE
SW1 POWER
F1 AC125V/2.5A
CN1
AC IN
L1 14mH
C1 0.1μF 250V
R1 OPEN
C3 100pF 250V
C4 100pF 250V
L2 OPEN
D11
D13
D14
D12
D11–14 ERA15-05
T1
C5 220μF 200V
R2 220k
R3 220k
C8 220pF 1kV
Q1 2SK2638 SWITCH
16.5
1.3
R19 10
C10 0.01μF
R7 220
R6 680
D7 1SS133
D21 1SS133
D4 1SS133
D6 1SS133
R5 20k
BEA1
D22 1SS133
R22 470
R12 18k
R11 8.2k
R9 6.8k
R17 680
D5 HZS9B2
R13 3k
R10 6.2k
Q2 2SC1741AS SWITCH
1.3
–0.2
C9 4700pF
R8 33k
C11 100pF
C15 2200pF 250V
BEA101
PC1 SFH615AGR
2.8
4.8
–0.2
3.9
R301 150
R305 1k
D101 21DQ10
B+
R320 OPEN
D103 HZ-18CP
C101 330μF 35V
D301 ERB83-006
D302 ERB83-006
C301 680μF 25V
C401 330μF 35V
D401 21DQ10
Q104 2SA933S SWITCH
13.3
12.6
R111 1k
R102 1k
Q101 2SB1642 +11V REG
13.3
11
12.7
R103 56
R107 4.7k
D110 1SS133
R101 2.7k
D104 1SS133
R104 2k
R112 4.7k
Q102 2SC1740S +11V REG
12.6
7.1
6.5
R108 1.2k
C110 1000pF
R106 2k
VR101 VR1k +11V ADJ
Q103 2SC1740S +11V REG
7.1
7.1
6.5
R113 4.7k
D102 MTZJ6.8A
C111 33μF 35V
R105 4.7k
R412 6.2k
R413 6.2k
R303 2.2k
VR301 VR1k +5V ADJ
R302 15k
C304 0.1pF
IC302 TA76431S
2.5
R304 2.7k
IC302 SHUNT REG
P302 1.6A
P301 2A
R203 6.8k
Q201 2SJ525 B+ SWITCH
5
5
0.5
D205 1SS133
R306 150
0
Q302 2SC1740S SWITCH
0.7
D402 MTZJ6.8A
Q403 2SA933S –11V REG
–6.6
–7.2
Q402 2SA933S –11V REG
–6.6
–7.2
–7.2
–11.5
C410 1000pF
R406 2.2k
R405 4.7k
R407 4.7k
D410 1SS133
Q404 2SC1704S SWITCH
–12.3
–11.6
–12.3
–12.3
R411 1k
B–
R402 1k
R403 100
–11.6
R401 OPEN
D404 1SS133
R408 5.6k
Q401 2SD2012 –11V REG
–11
R404 2k
VR401 VR1k –11V ADJ
R313 68
Q304 2SA933S +3.3V REG
4.3
5
4.3
R319 33k
Q301 2SB1642 +3.3V REG
5
3.4
4.3
R311 910
R314 120
C305 1000pF
R315 1.2k
R322 39
R316 39
C306 33μF 35V
IC303 TA76431AS
2.9
2.5
IC303 SHUNT REG
Q303 2SC1740S POWER CONTROL
0.2
0.8
R317 3k
R318 1.2k
R312 2.4k
R309 1.5k
C307 33μF 35V
R310 470
CN101 15P
1 P-DET
2 P-CONT
3 SW +11V
4 SW +11V
5 SW +5V
6 SW +5V
7 EVER +5V
8 SW +3.3V
9 SW +3.3V
10 D-GND
11 D-GND
12 M-GND
13 M-GND
14 SW –11V
15 SW –11V
AV-57 BOARD (2/2) CN204 (SEE PAGE 4-33)
05

MPN4901 (SWITCHING REGULATOR) PRINTED WIRING BOARD

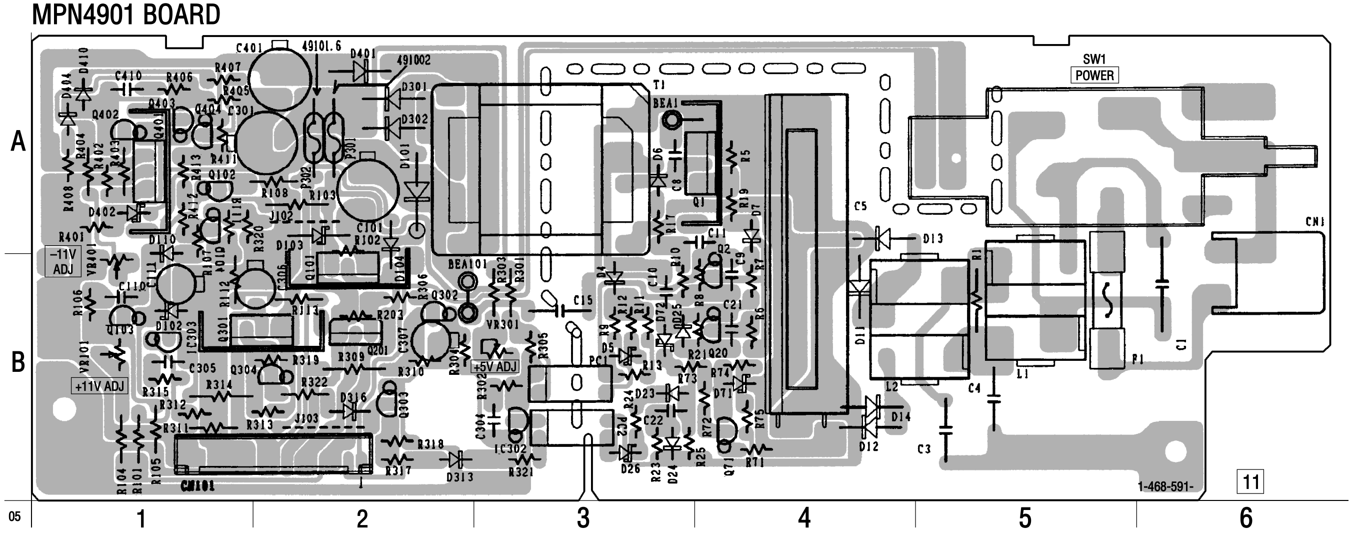
– Ref. No.: MPN4901 board; 5,000 series –

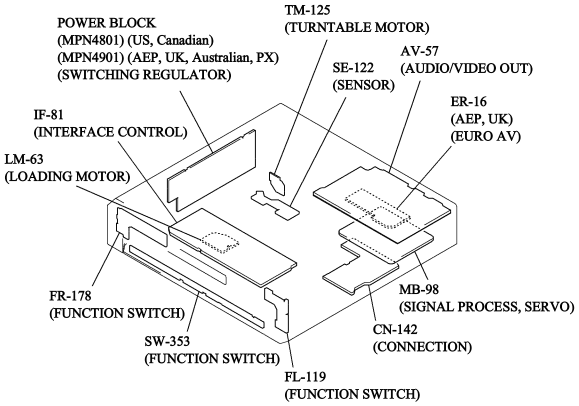
– AEP, UK, AUS, PX –

There are a few cases that the part isn't mounted in this model is printed on this diagram.

MPN4901BOARD

CN1	A-6
CN101	B-1
D4	B-3
D5	B-3
D6	A-3
D7	A-4
D11	B-4
D12	B-4
D13	B-4
D14	B-4
D23	B-3
D24	B-3
D25	B-3
D71	B-4
D72	B-3
D101	A-2
D102	B-1
D103	B-2
D104	B-2
D110	B-1
D301	A-2
D302	A-2
D313	B-2
D316	B-2
D401	A-2
D402	A-1
D404	A-1
D410	A-1
IC302	B-3
IC303	B-1
Q1	A-4
Q2	B-4
Q20	B-4
Q71	B-4
Q101	B-2
Q102	A-1
Q103	B-1
Q104	A-1
Q201	B-2
Q301	B-1
Q302	B-2
Q303	B-2
Q304	B-2
Q401	A-1
Q402	A-1
Q403	A-1
Q404	A-1


MPN4901 BOARD
A
B
1
2
3
4
5
6
05
SW1
POWER
CN1
T1
-11V ADJ
+11V ADJ
+5V ADJ
CN101
IC302
IC303
PC1
VR101
VR301
VR401
P1
L1
L2
C1
C3
C4
C5
C401
C410
C301
D401
D301
D302
D13
D14
D12
D11
491002
49101.6
1-468-591-
11

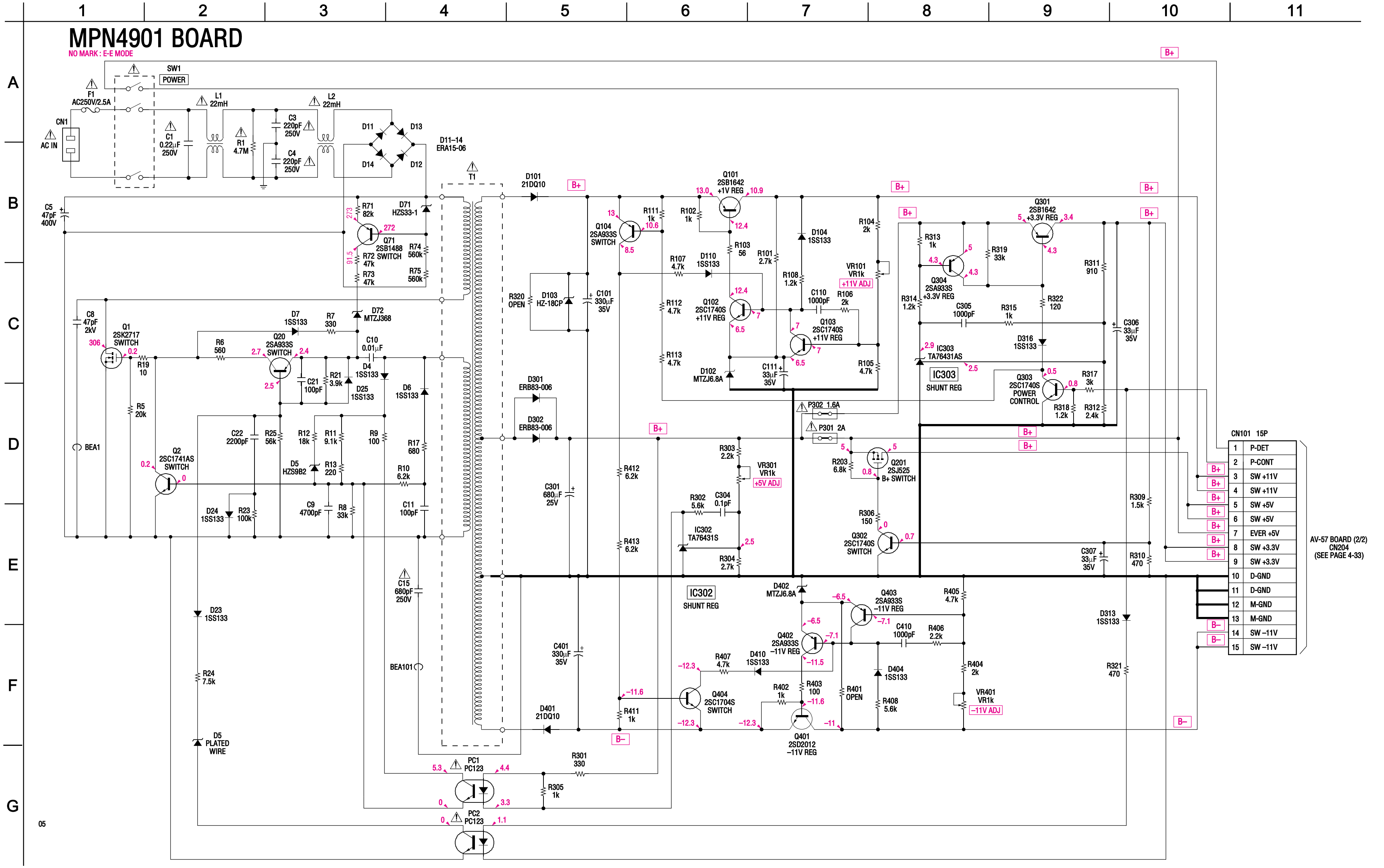

POWER BLOCK
(MPN4801) (US, Canadian)
(MPN4901) (AEP, UK, Australian, PX)
(SWITCHING REGULATOR)
TM-125
(TURNTABLE MOTOR)
AV-57
(AUDIO/VIDEO OUT)
SE-122
(SENSOR)
ER-16
(AEP, UK)
(EURO AV)
IF-81
(INTERFACE CONTROL)
LM-63
(LOADING MOTOR)
FR-178
(FUNCTION SWITCH)
SW-353
(FUNCTION SWITCH)
FL-119
(FUNCTION SWITCH)
MB-98
(SIGNAL PROCESS, SERVO)
CN-142
(CONNECTION)

MPN4901 (SWITCHING REGULATOR) SCHEMATIC DIAGRAM

– Ref. No.: MPN4901 board; 5,000 series –

– AEP, UK, AUS, PX –

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.


MPN4901 BOARD
NO MARK : E-E MODE
1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
CN1
AC IN
F1
AC250V/2.5A
SW1
POWER
C1
0.22µF
250V
L1
22mH
R1
4.7M
C3
220pF
250V
C4
220pF
250V
L2
22mH
D11
D13
D14
D12
D11–14
ERA15-06
T1
C5
47pF
400V
R71
82k
D71
HZS33-1
Q71
2SB1488
SWITCH
R72
47k
R73
47k
R74
560k
R75
560k
273
272
91.5
C8
47pF
2kV
Q1
2SK2717
SWITCH
306
0.2
R19
10
R5
20k
BEA1
D7
1SS133
R7
330
D72
MTZJ368
R6
560
Q20
2SA933S
SWITCH
2.7
2.4
2.5
C10
0.01µF
C21
100pF
R21
3.9k
D4
1SS133
D25
1SS133
D6
1SS133
C22
2200pF
R25
56k
R12
18k
R11
9.1k
R9
100
R17
680
D5
HZS9B2
R13
220
R10
6.2k
Q2
2SC1741AS
SWITCH
0.2
0
D24
1SS133
R23
100k
C9
4700pF
R8
33k
C11
100pF
C15
680pF
250V
BEA101
D23
1SS133
R24
7.5k
D5
PLATED
WIRE
D101
21DQ10
B+
R320
OPEN
D103
HZ-18CP
C101
330µF
35V
D301
ERB83-006
D302
ERB83-006
C301
680µF
25V
C401
330µF
35V
D401
21DQ10
Q104
2SA933S
SWITCH
13
8.5
R111
1k
10.6
R102
1k
Q101
2SB1642
+1V REG
13.0
10.9
12.4
R103
56
R107
4.7k
D110
1SS133
R101
2.7k
D104
1SS133
R104
2k
R108
1.2k
VR101
VR1k
+11V ADJ
R106
2k
C110
1000pF
R112
4.7k
Q102
2SC1740S
+11V REG
12.4
7
6.5
Q103
2SC1740S
+11V REG
7
7
6.5
R113
4.7k
D102
MTZJ6.8A
C111
33µF
35V
R105
4.7k
R412
6.2k
R413
6.2k
R411
1k
–11.6
B–
R303
2.2k
VR301
VR1k
+5V ADJ
R302
5.6k
C304
0.1pF
IC302
TA76431S
2.5
R304
2.7k
IC302
SHUNT REG
P302 1.6A
P301 2A
5
5
R203
6.8k
0.8
Q201
2SJ525
B+ SWITCH
R306
150
0
Q302
2SC1740S
SWITCH
0.7
D402
MTZJ6.8A
–6.5
Q403
2SA933S
–11V REG
–7.1
R405
4.7k
Q402
2SA933S
–11V REG
–6.5
–7.1
–11.5
C410
1000pF
R406
2.2k
R407
4.7k
D410
1SS133
–12.3
D404
1SS133
R404
2k
Q404
2SC1704S
SWITCH
–12.3
R402
1k
R403
100
–11.6
R401
OPEN
R408
5.6k
VR401
VR1k
–11V ADJ
–12.3
–11
Q401
2SD2012
–11V REG
R313
1k
Q304
2SA933S
+3.3V REG
4.3
5
4.3
R319
33k
Q301
2SB1642
+3.3V REG
5
3.4
4.3
R311
910
R314
1.2k
C305
1000pF
R315
1k
R322
120
C306
33µF
35V
2.9
IC303
TA76431AS
2.5
IC303
SHUNT REG
D316
1SS133
Q303
2SC1740S
POWER
CONTROL
0.5
0.8
R317
3k
R318
1.2k
R312
2.4k
R309
1.5k
C307
33µF
35V
R310
470
D313
1SS133
R321
470
PC1
PC123
5.3
4.4
0
3.3
PC2
PC123
0
1.1
R301
330
R305
1k
CN101 15P
1 P-DET
2 P-CONT
3 SW +11V
4 SW +11V
5 SW +5V
6 SW +5V
7 EVER +5V
8 SW +3.3V
9 SW +3.3V
10 D-GND
11 D-GND
12 M-GND
13 M-GND
14 SW –11V
15 SW –11V
AV-57 BOARD (2/2)
CN204
(SEE PAGE 4-33)
05

SECTION 5
IC PIN FUNCTION DESCRIPTION

5-1. SYSTEM CONTROL PIN FUNCTION (MB-98 BOARD IC103)

Pin No.	Pin name	I/O	Function
1-5	HA17-HA21	O	Address bus A17-A21
6	HA22	-	Not used
7	WP	O	Write control signal output to EEPROM
8	TRM–/XKRCS	-	– Tray motor
9	AVCC	-	Power supply
10	AVRH	-	Reference power supply (+3.3 V)
11	AVSS	-	Ground
12	AN0	I	Set of mode 0
13	AN1	I	Set of mode 1
14	AN2	I	Set of mode 2
15	AN3	I	Set of mode 3
16	INT0	I	Input of interrupt from AV DEC
17	INT1	I	Input of interrupt from ARP
18	INT2	I	Input of interrupt from servo DSP
19	INT3	-	Not used
20	INT4	I	Input of interrupt from IF CON
21	INT5	I	Position detection of Tray turning part
22	INT6	I	Position detection of Tray turning part
23	INT7	-	Not used
24	VCC	-	Power supply
25	SI0	I	Serial data input from IF CON
26	SO0	O	Serial data output to IF CON
27	SC0	O	Serial clock output to IF CON
28	SI1	I	Serial bus 1 (for data input)
29	SO1	O	Serial bus 1 (for data output)
30	SC1	O	Serial clock output
31	SI2	I	Serial bus 2 (for data input)
32	SO2	O	Serial bus 2 (for data output)
33	DSENS	-	Disk detection
34	VSS	-	Ground
35	XRST	O	System reset signal output
36	XARPRST	O	Reset signal output for ARP
37	RGBSEL/MICMUTE	O	RGB signal select signal output/Mic mute signal output
38	SDA	I/O	I2C bus seria data input/output
39	SCL	O	I2C bus serial clock output
40	TRM+/XKRRST	-	+ Tray motor
41	EUROV/Y/CLAPSW1	O	EURO V/Y select signal output/Mute signal output to video buffer
42	DISCEXT/CLPSW0	O	Line input select signal output (DISC: “H”, EXT: “ L”)
43	MD0	I	Input of mode select 0 (fixed at “ H”)
44	MD1	I	Input of mode select 1 (fixed at “ L”)
45	MD2	I	Input of mode select 2 (fixed at “ L”)
46	DREQ0	I	Input of DMA-REQ 0 from AV DEC
47	DACK0	O	Output of DMA-ACK 0 to AV DEC
48	XDRVMUTE	O	Drive mute signal output
49	DREQ1	I	Input of DMA-REQ 1 from AV DEC
50	DACK1	O	Output of DMA-ACK 1 to AV DEC
51	XIFCS	O	Chip select signal to IF CON
52	VSS	-	Ground
53	X1	O	Clock output (16.5 MHz)
54	X0	I	Clock input (16.5 MHz)
55	VCC	-	Power supply
56	CKSW1	I	Chuck sensor input to Rotary encoder
57	OCSW1	I	Chuck sensor input to Rotary encoder
58	CS0X	O	External ROM chip select signal output
59	CS1X	-	Not used
60	CS2X	O	Chip select signal output (for AV DEC)
61	CS3X	O	Chip select signal output (for AV DEC)
62	CS4X	O	Chip select signal output (for ARP)
63	CS5X	O	Chip select signal output (for servo DSP)
64	C	-	Capacitor (0.1uF) connect between ground
65	CS6X	-	Not used
66	CS7X	-	Not used
67	XWAIT	I	Wait signal input
68	BGRNTX	-	Test terminal (fixed at “H”)
69	BRQ	-	Test terminal
70	XRD	O	Read enable signal output

Pin No.	Pin name	I/O	Function
71	XWRH	O	High byte write enable signal output (16 bit and 8 bit)
72	XWRL	-	Not used
73	NMIX	-	Not used (fixed at “H”)
74	HSTX	-	Not used (fixed at “H”)
75	VSS	-	Ground
76	XFRRST	I	Reset signal input from IF CON
77	CPUCK	O	CPU clock signal output
78	OCSW2	I	Chuck sensor input to Rotary encoder
79	XDACS	O	Chip select signal output to DAC (2ch, 6ch)
80	VESCS/X39CS	O	Chip select signal output to DSP
81	48/44.1K	O	PLL FS control signal output
82	WIDE	O	WIDE select signal output
83	MAMUTE	O	Audio mute signal output
84	XLDON	O	LD control signal output
85-92	HD0-HD7	I/O	Data bus D0-D7 (16 bit only)
93-100	HD8-HD15	I/O	Data bus D8-D15 (16 bit) , D0-D7 (8 bit)
101	VSS	-	Ground
102-109	HA0-HA7	O	Address bus A00-A07
110	VCC	-	Power supply
111-118	HA8-HA15	O	Address bus A08-A15
119	VSS	-	Ground
120	HA16	O	Address bus A16

SECTION 6
TEST MODE

6-1. GENERAL DESCRIPTION

The Test Mode allows you to make diagnosis and adjustment easily using the remote commander and monitor TV. The instructions, diagnostic results, etc. are given on the on-screen display (OSD).

6-2. STARTING TEST MODE

Press the TITLE, CLEAR, POWER keys on the remote commander in this order with the power of main unit in OFF status, and the Test Mode starts, then “DIAG START” will be displayed on the fluorescent display tube and the menu shown below will be displayed on the TV screen. At the bottom of menu screen, the model name and revision number are displayed. Last Off at the lower right of screen indicates the information code concerning the last power off.

To execute each function, select the desired menu and press its number on the remote commander.

To exit from the Test Mode, press the POWER key.

```
         Test Mode Menu

0. Syscon Diagnosis
1. Drive Auto Adjustment
2. Drive Manual Operation
3. Mecha Aging
4. Emergency History
5. Version Information
6. Video Level Adjustment
                Exit: POWER Key
_
Model   : DPX-145xxx
Revision : 1.xxxx  Last Off: xx
```

Power Off Information Code List

00 : Primary Power Off
01 : Power Off Request from SYSTEM CONTROL
02 : Power Off by Emergency Power Off Command from SYSTEM CONTROL
(if information is sent from SYSTEM CONTROL)
03 : IF CON Judged that SYSTEM CONTROL is Faulty
04 : Power Off from Diagnosis Mode of IF CON
05 : Forced Power Off by the User
06 : Power Off by Power Supply Voltage Monitor

6-3. SYSCON DIAGNOSIS

The same contents as board detail check by serial interface can be checked from the remote commander.

On the Test Mode Menu screen, press 0 key on the remote commander, and the following check menu will be displayed.

```
    ### Syscon Diagnosis ###
           Check Menu
0. Quit
1. All
2. Version
3. Peripheral
4. Servo
5. Supply
6. AV Decoder
7. Video
8. Audio
_
```

0. Quit

Quit the Syscon Diagnosis and return to the Test Mode Menu.

1. All

All items continuous check

This menu checks all diagnostic items continuously. Normally, all items are checked successively one after another automatically unless an error is found, but at a certain item that requires judgment through a visual check to the result, the following screen is displayed for the key entry.

```
    ### Syscon Diagnosis ###

        Diag All Check
        No. 2 Version

 2-3. ROM Check Sum
Check Sum = xxxx


Press NEXT Key to Continue
Press PREV Key to Repeat
_
```

For the ROM Check, the check sum calculated by the Syscon is output, and therefore you must compare it with the specified value for confirmation.

Following the message, press NEXT key to go to the next item, or PREV key to repeat the same check again. To quit the diagnosis and return to the Check Menu screen, press STOP or ENTER key. If an error occurred, the diagnosis is suspended and the error code is displayed as shown below.

```
    ### Syscon Diagnosis ###



 3-3. EEPROM Check
Error 03: EEPROM Write/Reed N
Address    : 00000001
Write Data : 2492
Read Data  : 2490
Press NEXT Key to Continue
Press PREV Key to Repeat
_
```

Press STOP key to quit the diagnosis, or PREV key to repeat the same item where an error occurred, or NEXT key to continue the check from the item next to faulty item.

Submenu

Selecting 2 and subsequent items calls the submenu screen of each item.
For example, if “5. Supply” is selected, the following submenu will be displayed.

```
    ### Syscon Diagnosis ###
           Check Menu
          No. 5 Supply
0. Quit
1. All
2. ARP Register Check
3. ARP to RAM Data Bus
4. ARP to RAM Address Bus
5. ARP RAM Check
_
```

0. Quit

Quit the submenu and return to the main menu.

1. All

All submenu items continuous check.
This menu checks 2 and subsequent items successively. At the item where visual check is required for judgment or an error occurred, the checking is suspended and the message is output for key entry. Normally, all items are checked successively one after another automatically unless an error is found.
Selecting 2 and subsequent items executes respective menus and outputs the results.
For the contents of each submenu, see “General Description of Checking Method” and “Check Items List”.

General Description of Checking Method

2. Version

(2-2) Revision
ROM revision number is displayed.
Error: Not detected.
The revision number defined in the source file of ROM (IC107) is displayed with four digits.

(2-3) ROM Check Sum
Check sum is calculated.
Error: Not detected.
8-bit data are added up to the ROM (IC107) address 0x000F0000 to 0x002EFFFF, and the result is displayed with 4-digit hexadecimal number. Error is not detected. Compare the result with the specified value.

(2-4) Model Type
Model code is displayed.
Error: Not detected.
The model code read from the EEPROM is displayed with 2-digit hexadecimal number.

	Model Type	
US, Canadian, PX	4	0
AEP, UK	4	3
Australian	4	A

(2-5) Region
Region code is displayed.
Error: Not detected.
The region code determined from the model code is displayed.

3. Peripheral

(3-2) Gate Array Check
Data write → read, and accord check
Error 02: Gate array write/read discord
Data of 0x00 to 0xFF is written sequentially to the address 0xF and then read for checking.

(3-3) EEPROM Check
Data write → read, and accord check
Error 03: EEPROM write/read discord
0x9249, 0x2942 and 0x4294 are written to the address 0x00 to 0xFF of the EEPROM and then read for checking. Before writing, the data are saved, then after checking, they are written to restore the contents of EEPROM.

4. Servo

(4-2) Servo DSP Check

Data write → read, and accord check

Error 12: Read data discord

0x9249, 0x2942 and 0x4294 are written to the RAM address 0x602 of the Servo DSP and then read for checking. Also, OPT type “1 LASER” or “2 LASER” is displayed.

(4-3) DSP Driver Test

Test signal data → DSP Driver

Error: Not detected.

Caution: Do not perform this checking with the mechanical deck connected.

The maximum voltage is applied to the Servo Driver IC (IC401). If the mechanical deck is connected, it will be destroyed immediately. Following the output message, disconnect the mechanical deck, then enter the specified 4- or 5-digit value from the commander, and press the ENTER key. The test is conducted only if the entered value accords. To exit the test, check the output level, then press NEXT key.

This check is not conducted, but skipped in “All” menu item.

Supplement: How to disconnect mechanical deck

Disconnect flexible flat cables connected to the CN201 and CN202 of MB-98 board. Also, disconnect flat cable from the CN402.

5. Supply

(5-2) ARP Register Check

Data write → read, and accord check

Error 08: ARP register write, and read data discord

Data 0x00 to 0xFF is written sequentially to the ARP TMAX register (address 0xC6) and then read for checking.

(5-3) ARP to RAM Data Bus

Data write → read, and accord check

Error 09: ARP ←→ RAM data bus error

Data 0x0001 to 0x8000 where one bit each is set to 1 are written to the address 0 of RAM (IC303) connected to the ARP (IC302) through the bus, then they are read and checked. In case of discord, written bit pattern and read data are displayed. If data where multiple bits are 1 are read, the bits concerned may touch each other. Further, if data where certain bit is always 1 or 0 regardless of written data, the line could be disconnected or shorted.

(5-4) ARP to RAM Address Bus

Data write → other address read discord check

Error 10: ARP ←→ RAM address bus error

Caution: Address and data display in case of an error is different from the display of other diagnosis (described later).

Before starting the test, all addresses of RAM (IC303) are cleared to 0x0000.

First, 0xA55A is written to the address 0x00000, and the address data are read and checked from addresses 0x00001 to 0x80000 while shifting 1 bit each. Next, the data at that address is cleared, and it is written to the address 0x00001, and read and checked in the same manner. This check is repeated up to the address 0x80000 while shifting the address data by 1 bit each.

If data other than 0 is read at the addresses except written address, an error is given because all addresses were already cleared to 0. In this check, the error display pattern is different from that of other diagnosis; read data, written address, and read address are displayed in this order. However, the message uses same template, and accordingly exchange Address and Data when reading. The following display, for example,

```
    ### Syscon Diagnosis ###




 5-4. ARP to RAM Address Bus
Error 10: ARP - RAM Address B
Address    : 0000A55A
Write Data : 00000000
Read Data  : 00080000
Press NEXT Key to Continue
Press PREV Key to Repeat

_
```

shows the data 0xA55A was read from address 0x00080000 though it was written to the address 0x00000000. This implies that these addresses are in the form of shadow. Also, if the read data is not 0xA55A, another error will be present.

(5-5) ARP RAM Check

Data write → read, and accord check

Error 11: ARP RAM read data discord

The program code data stored in ROM are copied to all areas of RAM (IC303) connected to the ARP (IC302) through the bus, then they are read and checked if they accord. If the detail check was selected initially, the data are written to all areas and read, then the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 11, and the test is suspended.

6. AV Decoder

(6-2) 1930 RAM

Data write → read, and accord check

Error 13: AVD RAM read data discord

The program code data stored in ROM (IC107) are copied to all areas of RAM (IC504, IC505) connected to the AVD (IC503) through the bus, then they are read and checked if they accord. Further, the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 13, and the test is suspended.

During the test, OSD display becomes blank as the OSD area is also checked.

(6-3) 1930 SP

ROM → AVD RAM → Video OUT

Error: Not detected.

The data including sub picture streams in ROM (IC107) are transferred to the RAM (IC504, IC505) in AVD (IC503), and output as video signals from the AVD (IC503).

Though OSD display becomes blank, the output of video signals continues until the key is pressed.

They are output from all video terminals (Composite, Y/C, Component) except EURO AV terminal.

7. Video

(7-2) Color Bar
AVD color bar command write → Video OUT
Error: Not detected.
The command is transferred to the AVD, and the color bar signals are output from video terminals.
They are output from all video terminals (Composite, Y/C, Component) except EURO AV terminal.

(7-3) Composite Out (AEP, UK Model)
EURO-AV Composite video output check
AVD color bar command write → Video (EURO-AV Composite) OUT
Error: Not detected.
With the Component of video output turned off, the color bar signals are output from the EURO-AV terminal.

(7-4) Y/C Out (AEP, UK Model)
EURO-AV Y/C video output check
AVD color bar command write → Video (EURO-AV Y/C) OUT
Error: Not detected.
With the Y/C of video output turned on, the color bar signals are output from the EURO-AV terminal.

(7-5) RGB Out (AEP, UK Model)
EURO-AV RGB video output check
AVD color bar command write → Video (EURO-AV RGB) OUT
Error: Not detected.
With the RGB of video output turned on, the color bar signals are output from the EURO-AV terminal.

(7-6) Component Out (AEP, UK Model)
EURO-AV Component video output check
AVD color bar command write → Video (EURO-AV Component) OUT
Error: Not detected.
With the Component of video output turned on, the color bar signals are output from the EURO-AV terminal.

8. Audio

(8-2) ARP → 1930
Error 14 : ARP → 1930 video NG
15 : ARP → 1930 audio NG

(8-3) Test Tone
A pink noise signal is output from the AVD (IC503) through optical coaxial digital terminal and analog audio terminal.
Error: Not detected.
After turning on all outputs, each time the NEXT key is pressed, the output channel is switched for individual channel checking.
Left + Right → Left → Right are checked in this order.

Check Items List

2) Version
(2-2) Revision
(2-3) ROM Check Sum
(2-4) Model Type
(2-5) Region

3) Peripheral
(3-2) Gate Array Check
(3-3) EEPROM Check

4) Servo
(4-2) Servo DSP Check
(4-3) DSP Driver Test

5) Supply
(5-2) ARP Register Check
(5-3) ARP to RAM Data Bus
(5-4) ARP to RAM Address Bus
(5-5) ARP RAM Check

6) AV Decoder
(6-2) 1930 RAM
(6-3) 1930 SP

7) Video
(7-2) Color Bar
(7-3) Composite Out (AEP, UK Model)
(7-4) Y/C Out (AEP, UK Model)
(7-5) RGB Out (AEP, UK Model)
(7-6) Component Out (AEP, UK Model)

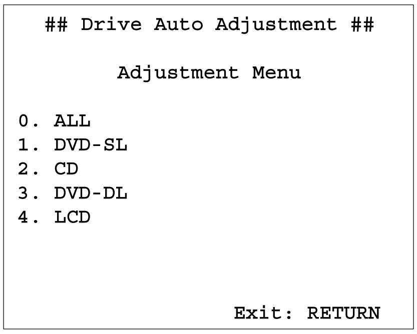
8) Audio
(8-2) ARP → 1930
(8-3) Test Tone

Error Codes List

00: Error not detected
01: RAM write/read data discord
02: Gate array NG
03: EEPROM NG
04: Flash memory clear error
05: Flash memory write error
06: Flash memory read data discord
07: 2725 read data discord
08: ARP register read data discord
09: ARP ←→ RAM data bus error
10: ARP ←→ RAM address bus error
11: ARP RAM read data discord
12: Servo DSP NG
13: 1930 SDRAM NG
14: ARP → 1930 video NG
15: ARP → 1930 audio NG
16: 1910 UCODE download NG
17: System call error (function not supported)
18: System call error (parameter error)
19: System call error (illegal ID number)
20: System call error (time out)
21: NAND Flash faulty blocks exceed 10
90: Error occurred
91: User verification NG
92: Diagnosis cancelled

6-4. DRIVE AUTO ADJUSTMENT

On the Test Mode Menu screen, press 1 key on the remote commander, and the drive auto adjustment menu will be displayed.



```
   ## Drive Auto Adjustment ##

         Adjustment Menu

0. ALL
1. DVD-SL
2. CD
3. DVD-DL
4. LCD



                    Exit: RETURN
```

Normally, 0 is selected to adjust DVD (single layer), CD, DVD (dual layer), and LCD (SACD) in this order. But, individual items can be adjusted for the case where adjustment is suspended due to an error. In this mode, the adjustment can be made easily through the operation following the message displayed on the screen. Which disc is currently adjusted is displayed on the fluorescent display tube.
The disc used for adjustment must be the one specified for adjustment.

0. ALL

You will be asked if EEPROM data are initialized or not, and for this prompt, select 0 and press the ENTER key. First , the servo setting data in EEPROM, Emergency History and Hour Meter are cleared to initialize. Then, the disc tray will open. Place three kinds of discs on the turntable in advance. Place the DVD-SL disc on the turntable number 1, and press the ENTER key. The turntable turns and the number 2 will come to the front, and then place CD disc on the number 2. Similarly, place the DVD-DL disc on the number 3, and press the ENTER key. The adjustment will then be executed in order. If an error is detected, retry adjustment from the beginning. To quit the adjustment in the midway, press the STOP button. In adjusting each disc, the mirror time is measured to check the disk type. In the auto adjustment, whether the disc type is correct is not checked unlike conventional models, and accordingly, take care not to insert a different type of disc.

1. DVD-SL (single layer)

Select 1, place DVD single layer disc on the turntable number 1 and press ENTER key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

DVD Single Layer Disc Adjustment Steps

1. SLED TILT Reset
2. Disc Check Memory SL
3. Set Disc Type SL
4. Spdl Start
5. Wait 1 sec
6. LD ON
7. Focus Error Check
8. Focus ON 0
9. Auto Track Offset Adjust L0
10. Trv Level Check
11. Tracking ON
12. Wait 100 msec
13. CLVA ON
14. Wait 500 msec
15. Sled ON
16. Auto Loop Filter Offset Adjust
17. Auto Focus Gain Adjust L0
18. Auto Focus Balance Adjust L0
19. EQ Boost Adjust
20. Auto Loop Filter Offset Adjust
21. RF Level Measure
22. Jitter Disp ON
23. Jitter Memory
24. Jitter Disp OFF
25. Eep Copy Loop Filter Offset
26. All Servo Stop

2. CD

Select [2], place CD disc on the turntable number 2 and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

CD Adjustment Steps

1. Sled Tilt Reset
2. Disc Check Memory CD
3. Set Disc Type CD
4. Spdl Start
5. Wait 1 sec
6. LD ON
7. Focus Error Check
8. Fcs ON 1
9. Auto Track Offset Adjust L0
10. Trv Level Check
11. Tracking ON
12. Wait 100 msec
13. CLVA ON
14. Wait 500 msec
15. Sled ON
16. Auto Loop Filter Offset Adjust
17. Auto Focus Gain Adjust L0
18. Auto Focus Balance Adjust L0
19. Eq Boost Adjust
20. Auto Loop Filter Offset Adjust
21. Auto Track Gain Adjust
22. RF Level Measure
23. Jitter Disp ON
24. Jitter Memory
25. Jitter Disp OFF
26. All Servo Stop

3. DVD-DL (dual layer)

Select [3], place DVD dual layer disc on the turntable number 3 and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

DVD Dual Layer Disc Adjustment Steps

1. Sled Tilt Reset
2. Disc Check Memory DL
3. Set Disc Type DL

Layer 1 Adjust

4. Spdl Start (Wait 1 sec)
5. LD ON
6. Fcs ON 1
7. Auto Track Offset Adjust L1
8. Tracking ON
9. Wait 100 msec
10. Clva ON (Wait 500 msec)
11. Sled ON
12. Auto Focus Gain Adjust L1
13. Auto Focus Balance Adjust L1
14. Eq Boost Adjust L1
15. Auto Track Gain Adjust L1
16. Jitter Disp ON
17. Jitter Memory
18. Jitter Disp Off

Layer 0 Adjust

19. Focus Jump (L1 → L0)
20. Auto Track Offset Adjust L0
21. Tracking ON (Wait 100 msec)
22. Clva ON (Wait 500 msec)
23. Sled ON
24. Auto Focus Gain Adjust L0
25. Auto Focus Balance Adjust L0
26. Eq Boost Adjust L0
27. Auto Track Gain Adjust L0
28. Jitter Disp ON
29. Jitter Memory
30. Jitter Disp OFF
31. All Servo Stop

4. LCD (SACD)

This model does not adjust it because the adjusted data of CD are reflected.

6-5. DRIVE MANUAL OPERATION

On the Test Mode Menu screen, select 2, and the manual operation menu will be displayed. For the manual operation, each servo on/off control and adjustment can be executed manually.

```
   ## Drive Manual Operation ##

          Operation Menu
1. Disc type
2. Servo Control
3. Track/Layer Jump
4. Manual Adjustment
5. Auto Adjustment
6. Memory Check
7. 5CHG Mecha Control
0. Disc Check Memory

                 Exit: RETURN
```

In using the manual operation menu, take care of the following points. These commands do not provide protection, thus requiring correct operation. The sector address or time code field is displayed when a disc is loaded.

1. Set correctly the disc type to be used on the Disc Type screen.
   The disc type must be set after a disc was loaded.
   The set disc type is cleared when the tray is opened.
2. After power ON, if the Drive Manual Operation was selected, first perform “Reset SLED TILT” by opening 1. Disc Type screen.
3. In case of an alarm, immediately press the STOP button to stop the servo operation, and turn the power OFF.

Basic operation (controllable from front panel or remote commander)

POWER	Power OFF
STOP	Servo stop
OPEN/CLOSE	Stop+Eject/Loading
RETURN	Return to Operation Menu or Test Mode Menu
NEXT, PREV	Transition between sub modes of menu
1 to 9, 0	Selection of menu items
Cursor UP/DOWN	Increase/Decrease in manually adjusted value
DISC SELECT 1 to 5	Selection of applicable number disc
DISC SKIP	Go to the next disc
EXCHANGE	Open the disc tray while playing a disc

0. Disc Check Memory

```
            Disc Check



1. SL Disc Check
2. CD Disc Check
3. DL Disc Check




0. Reset SLED TILT
```

On this screen, the mirror time is measured and written to the EEPROM to check the disc type. First, set a DVD SL disc and press 1, then set a CD disc and press 2, and finally set a DVD DL disc and press 3. The measured mirror time is displayed respectively.
The adjustment must be executed more than once after default data were written.
Reference value for DVD is from 10 to 20, and for CD, from 28 to 4F. Check that the value of CD is larger than that of DVD. When those values are beyond a range perform this adjustment again.
From this screen, you can go to another mode by pressing NEXT or PREV key, but you cannot enter this mode from another mode. You can enter this mode from the Operation Menu screen only.

1. Disc Type

```
            Disc Type
1. Disc Type Auto Check
2. DVD SL   12 cm
3. DVD DL   12 cm
4. CD       12cm
5. LCD      12 cm
6. DVD SL   8 cm
7. DVD DL   8 cm
8. CD       8 cm
9. LCD      8 cm
0. Reset SLED TILT
                          EMG. 00
```

On this screen, select the disc type. To select the disc type, press the number of the loaded disc. The selected disc type is displayed at the bottom. Selecting 1 automatically selects and displays the disc type. In case of wrong display, retry “Disc Check Memory”. Also, opening the tray causes the set disc type to be cleared. In this case, set the disc type again after loading.
In performing manual operation, the disc type must be set.
Once the disc type has been selected, the sector address or time code display field will appear as shown below. These values are displayed when PLL is locked.

```
            Disc Type
1. Disc Type Auto Check
2. DVD SL   12 cm
3. DVD DL   12 cm
4. CD       12cm
5. LCD      12 cm
6. DVD SL   8 cm
7. DVD DL   8 cm
8. CD       8 cm
9. LCD      8 cm
0. Reset SLED TILT
        SA.------ SI.-- EMG. 00
DVD SL 12 cm
```

Display when DVD SL 12cm disc was selected

```
             Disc Type
1. Disc Type Auto Check
2. DVD SL   12 cm
3. DVD DL   12 cm
4. CD       12cm
5. LCD      12 cm
6. DVD SL   8 cm
7. DVD DL   8 cm
8. CD       8 cm
9. LCD      8 cm
0. Reset SLED TILT
         TC.---:---:--- EMG. 00
CD   12 cm
```

Display when CD 12cm disc was selected

0 Reset SLED TILT	Reset the Sled and Tilt to initial position.
1 Disc Type Check	Judge automatically the loaded disc. As the judged result is displayed at the bottom of screen, make sure that it is correct. If Disc Check Memory menu has not been executed after EEPROM default setting, the disc type cannot be judged. In this case, return to the initial menu and make a check for three types of discs (SL, DL, CD).
2 to 9	Select the loaded disc. The adjusted value is written to the address of selected disc. No further entry is necessary if 1 was selected.

2. Servo Control

```
           Servo Control
1. LD          Off R. Sled FWD
2. SP          Off L. Sled REV
3. Focus       Off
4. TRK.        Off
5. Sled        Off
6. CLVA        Off
7. FCS. Srch Off


0. Reset SLED TILT
        SA.------ SI.-- EMG. 00
DVD SL 12 cm
```

On this screen, the servo on/off control necessary for replay is executed. Normally, turn on each servo from 1 sequentially and when CLVA is turned on, the usual trace mode becomes active. In the trace mode, DVD sector address or CD time code is displayed. This is not displayed where the spindle is not locked.
The spindle could run overriding the control if the spindle system is faulty or RF is not present. In such a case, do not operate CLVA.

0 Reset SLED TILT	Reset the Sled and Tilt to initial position.
1 LD	Turn ON/OFF the laser.
2 SP	Turn ON/OFF the spindle.
3 Focus	Search the focus and turn on the focus.
4 TRK	Turn ON/OFF the tracking servo.
5 Sled	Turn ON/OFF the sled servo.
6 CLVA	Turn ON/OFF normal servo of spindle servo.
7 FCS. Srch	Apply same voltage as that of focus search to the focus drive to check the focus drive system.
→ Sled FWD	Move the sled outward. Perform this operation with the tracking servo turned off.
← Sled REV	Move the sled inward. Perform this operation with the tracking servo turned off.

3. Track/Layer Jump

```
      Tracking/Layer Jump
1. 1Tj FWD    R. Fj (L1 → L0)
2. 1Tj REV    L. Fj (L0 → L1)
3. 2Tj FWD    U. Lj (L1 → L0)
4. 2Tj REV    D. Lj (L0 → L1)
5. NTj FWD
6. NTj REV
7. 500Tj FWD
8. 500Tj REV
9. 10k/20k FWD
0. 10k/20k REV
       SA.------ SI.-- EMG. 00
DVD SL 12 cm
```

On this screen, track jump, etc. can be performed. Only for the DVD-DL, the focus jump and layer jump are displayed in the right field.

1 1Tj FWD	1-track jump forward.
2 1Tj REV	1-track jump reverse.
3 2Tj FWD	2-track jump forward.
4 2Tj REV	2-track jump reverse.
5 NTj FWD	N-track jump forward.
6 NTj REV	N-track jump reverse.
7 500Tj FWD	Fine search forward.
8 500Tj REV	Fine search reverse.
9 10k/20k FWD	Direct search forward.
0 10k/20k REV	Direct search reverse.

– The following commands are valid for DVD-DL disc only –

→ Fj (L1 → L0)	Focus jump forward. (Trk/Sled Servo OFF)
← Fj (L0 → L1)	Focus jump reverse. (Trk/Sled Servo OFF)
↑ Lj (L1 → L0)	Layer jump forward. (Trk/Sled Servo ON)
↓ Lj (L0 → L1)	Layer jump reverse. (Trk/Sled Servo ON)

4. Manual Adjustment

```
       Manual Adjustment
1. TRK. Offset
2. Focus Gain
3. TRK. Gain
4. Focus Offset
5. Focus Balance
6. L.F. Offset
7. EQ BOOST
8. GD ADJ
Adjustment : Up/Down
                     Jitter 1D
        SA.------ SI.-- EMG. 00
DVD SL 12 cm
```

On this screen, each item can be adjusted manually. Select the desired number [1] to [8] from the remote commander, and current setting for the selected item will be displayed, then increase or decrease numeric value with [↑] key or [↓] key. This value is stored in the EEPROM. If CLV has been applied, the jitter is displayed for reference for the adjustment.

[1] TRK. Offset	Adjusts tracking offset.
[2] Focus Gain	Adjusts focus gain.
[3] TRK. Gain	Adjusts track gain.
[4] Focus Offset	Adjusts focus offset.
[5] Focus Balance	Adjusts focus balance.
[6] L.F. Offset	Adjusts loop filter offset.
[7] EQ BOOST	
[8] GD ADJ	

5. Auto Adjustment

```
        Auto Adjustment
1. Auto TRK. Offset
2. Auto Focus Balance
3. Auto Focus Offset
4. Auto Focus Gain
5. Auto TRK. Gain
6. Auto EQ
7. Auto L.F. Offset
8. Auto Group Delay


        SA.------ SI.-- EMG. 00
DVD SL 12 cm
```

On this screen, each item can be adjusted automatically. Select the desired number [1] to [8] from the remote commander, and selected item is adjusted automatically.

[1] Auto TRK. Offset	Adjusts tracking offset.
[2] Auto Focus Balance	Adjusts focus balance.
[3] Auto Focus Offset	Adjusts focus offset.
[4] Auto Focus Gain	Adjusts focus gain.
[5] Auto TRK. Gain	Adjusts track gain.
[6] Auto EQ	
[7] Auto L.F. Offset	Adjusts loop filter offset.
[8] Auto Group Delay	

6. Memory Check

```
EEPROM DATA 1           -- DL --
             CD LCD   SL  L0  L1
Focus Gain    xx xx   xx  xx  xx
TRK. Gain     xx xx   xx  xx  xx
FCS Balance   xx xx   xx  xx  xx
Focus Bias    xx xx   xx  xx  xx
TRV. Offset   xx xx   xx  xx  xx
L.F. Offset   xx xx   xx  xx  xx
EQ Boost      xx xx   xx  xx  xx
Mirror Time   xx --   xx  xx
_
DOWN : Next Data
CLEAR: Default Set    page. 1/2
```

```
EEPROM DATA 2           -- DL --
             CD LCD   SL  L0  L1
RF Jitter     xx --   xx  xx  xx
RF Level      xx --   xx  --  --
FE Level      xx --   xx  --  --
FE Balance    xx --   xx  --  --
TRV. Level    xx --   xx  --  --
Analog FRSW   xx xx   xx  xx  xx
PLL Dac Gain  xx xx   xx  xx  xx


_
UP : Prev Data
CLEAR: Default Set    page. 2/2
```

On this screen, current servo adjusted data stored in the EEPROM are displayed. The adjusted data are initialized by pressing the [CLEAR] key, but be careful that they are not recoverable after initialization.
Before clearing the adjusted data, make a note of the set data. This screen will also appear if [0] All is selected in the Drive Auto Adjustment. In this case, default setting cannot be made.
For reference, the drive has been designed so that the gain center value is 20 and offset value is 80. Other values will be in a range of 10 to 80. If extreme value such as 00 or FF is set, adjustment will be faulty. In such a case, check for disc scratch or cable disconnection, then perform adjustment again.

7. 5CHG Mecha Control

```
  ## 5CHG MechaControl Menu ##

ENTER   : Mecha Initial
OP/CL   : Tray Open/Close

UPDOWN  : TurnTable Stop
RIGHT   : TurnTable RightTurn
LEFT    : Turntable LeftTurn


RETURN  : Exit
```

[ENTER] Mecha Initial	Initializes the mechanism. When the Drive Manual Operation started, the mechanism is initialized. Use this when an error occurred.

OPEN/CLOSE Tray Open/Close	Opens/closes the disc tray.
Cursor UP/DOWN TurnTable Stop	Stops the turning of turntable.
Cursor RIGHT TurnTable RightTurn	Turns the turntable clockwise under full control.
Cursor LEFT TurnTable LeftTurn	Turns the turntable counterclockwise under full control.
RETURN Exit	Returns to Operation Menu.

6-6. MECHA AGING

```
       ### Mecha Aging ###




Press OPEN key




Abort: STOP key
```

On the Test Mode Menu screen, selecting 3 executes the aging of mechanism. First, open the tray and load a disc. Press the PLAY key, and the aging will start. When the tray is closed, the disc type and size are judged and displayed. During aging, the repeat cycle is displayed. Aging can be aborted at any time by pressing the STOP key. After the operation has stopped, unload the disc and press again the STOP key or the RETURN key to return to the Test Mode Menu.

6-7. EMERGENCY HISTORY

```
      ### MEG. History ###

Laser Hours     CD   xxxxxxxh
                DVD  xxxxxxxh

1. 00 00 00 00  00 00 00 00
   00 00 00 00  00 00 00 00

2. 00 00 00 00  00 00 00 00
   00 00 00 00  00 00 00 00

Select: 1 - 9   Scroll: UP/DOWN
(1: Last EMG.)  Exit: Return
```

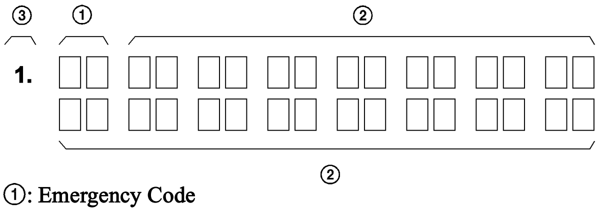
On the Test Mode Menu screen, selecting 4 displays the information such as servo emergency history. The history information from last 1 up to 10 can be scrolled with ↑ key or ↓ key. Also, specific information can be displayed by directly entering that number with ten keys.

The upper two lines display the laser ON total hours. Data below minutes are omitted.

Clearing History Information

◎ Clearing laser hours
Press DISPLAY and CLEAR keys in this order.
Both CD and DVD data are cleared.
Clearing emergency history
◎ Press TITLE and CLEAR keys in this order.
Initializing set up data
◎ Press DVD and CLEAR keys in this order.
The data have been initialized when “Set Up Initialized” message is displayed. The EMG. History screen will be restored soon.

How to see Emergency History



①: Emergency Code
②: Don't Care
These codes are used for verification of software designing.
③: Historical order 1 to 9

Emergency Codes List

10: Communication to IC202 (MB-98 board) failed.
11: Each servo for focus, tracking, and spindle is unlocked.
12: Communication to EEPROM, IC101 (MB-98 board) failed.
13: Writing of hours meter data to EEPROM, IC101 (MB-98 board) failed.
14: Communication to Servo DSP IC302 (MB-98 board) failed, or Servo DSP is faulty.
20: Initialization of tilt servo and sled servo failed. They are not placed in the initial position.
21: Tilt servo operation error
22: Syscon made a request to move the tilt servo to wrong position.
23: Sled servo operation error
24: Syscon made a request to move the sled servo to wrong position.
30: Tracking balance adjustment error
31: Tracking gain adjustment error
32: Focus balance adjustment error
33: Focus bias adjustment error
34: Focus gain adjustment error
35: Tilt servo adjustment error
36: RF equalizer adjustment error
37: RF group delay adjustment error
38: Jitter value after adaptive servo operation is too large.
40: Focus servo does not operate.
41: With a dual layer (DL) disc, focus jump failed.
50: CLV (spindle) servo does not operate.
51: Spindle does not stop.
60: With a DVD disc, Syscon made a request to seek nonexistent address.
61: With a CD disc, Syscon made a request to seek nonexistent address.
62: With a CD disc, Syscon made a request to seek nonexistent track No. and index No.
63: With a DVD disc, seeking of target address failed.
64: With a CD disc, seeking of target address failed.
65: With a CD disc, seeking of target index failed.
70: With a DVD disc, physical information data could not be read.
71: With a CD disc, TOC data could not be read.
80: Disc type judgment failed.
81: As disc type judgment failed, retry was repeated.
82: As disc type judgment failed, a measurement error occurred.
83: Disc type could not be judged within the specified time.
84: Illegal command code was received from Syscon.
85: Illegal command was received from Syscon.

6-8. VERSION INFORMATION

```
    ## Version Information ##

IF con.    Ver : x. xxx (xxxx)
           Group    00

SYScon.    Ver : x. xxx (xxxx)
           Model    xx
           Region   0x
Servo DSP.  Ver : 1. xxxx
OPT Type : x LASER

Exit: RETURN
_
```

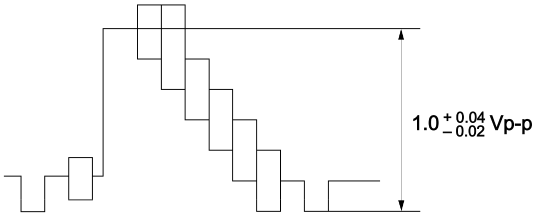
The ROM version, region code, OPT type, etc. are displayed if 5 is selected in the Test Mode Menu.
The parenthesized hexadecimal number in the version number field indicates the checksum value of the ROM.

Note : After down loading ROM data, sometimes it happens that checksum is not the same as that of ROM data which has been down loaded. In such a case, go back to the menu and select “0. Syscon Diagnosis”, then select “1. All” in “2. Version”. If the result of this operation does not give an agreement, it must be either Down Load error or ROM error.

6-9. VIDEO LEVEL ADJUSTMENT

On the Test Mode Menu screen, selecting 6 displays color bars for video level adjustment. During display of color bars, OSD disappears but the menu screen will be restored if pressing any key.

Measurement point	: LINE OUT VIDEO (75 Ω terminating resistance)
Measuring instrument	: Oscilloscope
Adjustment device	: RV501 on MB-98 board
Specified value	: 1.0 $^{+0.04}_{-0.02}$ Vp-p



6-10. IF CON SELF DIAGNOSTIC FUNCTION

1. IF-81 BOARD (IF CON) TEST MODE

The front board test mode is the IF CON self diagnostic mode. The IF CON can diagnose the functions of the front panel boards that the IF CON controls. Normally, the IF CON makes a serial communication with the SYSTEM CONTROL and operates following the commands from the SYSTEM CONTROL, but in the Test mode, the IF CON operates independently from the SYSTEM CONTROL.

In the Test mode, the following functions can be checked.
1. Button function
2. Remote commander receiving function
3. SYSTEM CONTROL-IF CON serial communication
4. Click shuttle function
5. Fluorescent display tube lighting check
   Grid check
   Anode check
6. LED control function

In the Test mode, the set operates same as usual, except voltage monitoring, communication monitoring, display of fluorescent display tube, and LED control.
1. The routine that monitors +3.3 V (P-CONT) of MB-98 board is not provided.
2. The monitoring timer for serial communication with the SYSTEM CONTROL is not provided. The set is not placed in the Standby mode, even if the communication with SYSTEM CONTROL is normal.
3. Display of fluorescent display tube (normally, display is made following the commands from SYSTEM CONTROL)
4. LED control (normally, control is made following the commands from SYSTEM CONTROL)

2. OPERATION OF SELF CHECK MODE

The Self Check mode is the function to conduct the basic test to the FL display and DVD panel section.

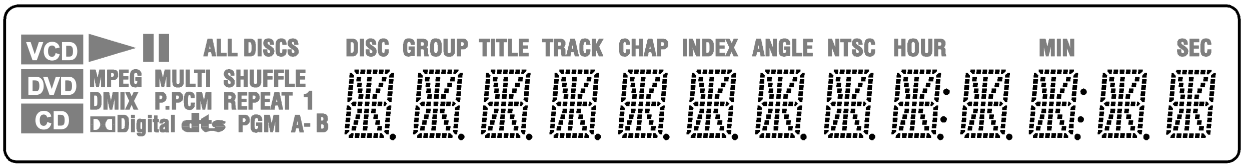
2-1. Self Check Mode Transition Processing

At the AC Power ON after IF CON (IC404) was reset, the input to 10pin (SELF CHECK) is judged and if “Low” is entered, the main unit transits to the Self Check mode. In this port input judgment, the result of 3-time attempts must be same (assuming that the MB-98 board are not connected). While pressing the STOP key on the main unit with the IF CON in STANDBY mode, enter RETURN → DISPLAY on the remote commander, and the unit transits to the Self Check Mode. The Self Check mode terminates when the IF CON transits to the STANDBY mode.

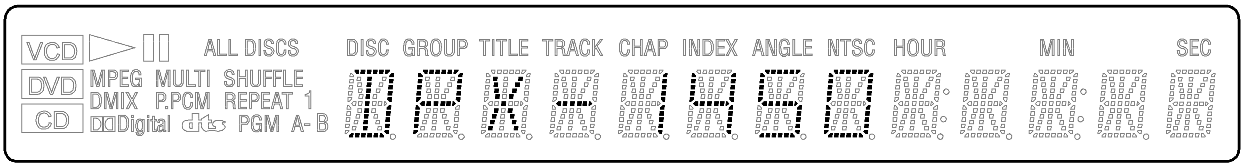
2-2. Operation of Auto Self Check

When the Self Check mode becomes active at the AC Power ON or by key input, the test display of the following steps (1) to (4) is repeated.

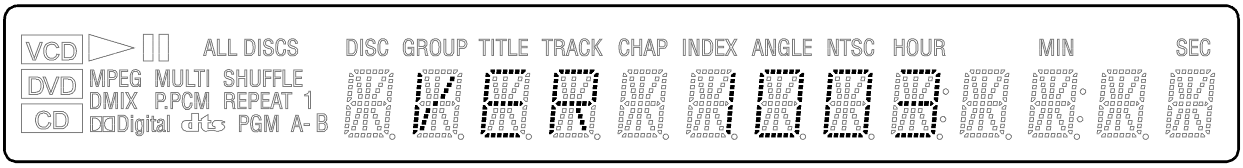
(1) FLD and LED all ON (for 5 seconds)


VCD
DVD
CD
ALL DISCS
MPEG MULTI SHUFFLE
DMIX P.PCM REPEAT 1
Digital dts PGM A- B
DISC GROUP TITLE TRACK CHAP INDEX ANGLE NTSC HOUR MIN SEC

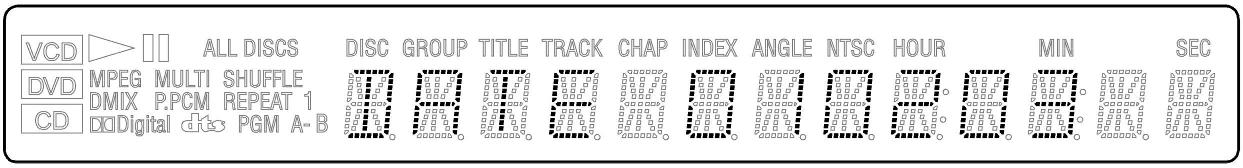
(2) MODEL display (for 2 seconds)


VCD
DVD
CD
ALL DISCS
MPEG MULTI SHUFFLE
DMIX P.PCM REPEAT 1
Digital dts PGM A- B
DISC GROUP TITLE TRACK CHAP INDEX ANGLE NTSC HOUR MIN SEC
DPX-1450

(3) Version display (for 2 seconds)


VCD
DVD
CD
ALL DISCS
MPEG MULTI SHUFFLE
DMIX P.PCM REPEAT 1
Digital dts PGM A- B
DISC GROUP TITLE TRACK CHAP INDEX ANGLE NTSC HOUR MIN SEC
VER 003

(4) ROM creation date display (for 2 seconds)


VCD
DVD
CD
ALL DISCS
MPEG MULTI SHUFFLE
DMIX P.PCM REPEAT 1
Digital dts PGM A- B
DISC GROUP TITLE TRACK CHAP INDEX ANGLE NTSC HOUR MIN SEC
DATE 010203

2-3. Each Self Check Function

Each Self Check function tests the FLD display, LED display, and key input.

Input Voltage [V]	IC404: Pin No. (Signal)						
	Pin ㉛ (AD1)	Pin ㉜ (AD2)	Pin ㉝ (AD3)	Pin ㉞ (AD4)	Pin ㉟ (AD5)	Pin ㊱ (AD6)	Pin ㊲ (AD7)
0	ENTER	DVD MENU	5	PLAY	OPEN/CLOSE	LOAD	SURROUND
1.07	DOWN	RETURN	4	PAUSE	DISPLAY	TITLE	BNR
2.0	LEFT	ONE/ALL	3	PREVIOUS	DISC SKIP	–	–
3.0	UP	REPEAT	2	NEXT	EXCHANGE	–	–
3.96	RIGHT	SHUFFLE	1	–	–	–	–
5.0	–	–	–	–	–	–	–

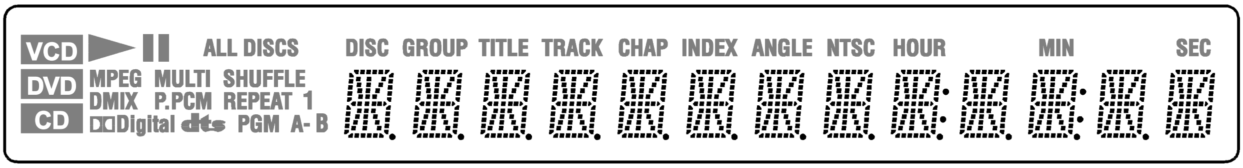
2-3-1. FLD and LED All ON

2-3-1-1. Transition Keys in Self Check Mode

- STOP key and OPEN/CLOSE key on the main unit
- LEFT key on the main unit and the remote commander

2-3-1-2. Operation and Display

In this mode, all LEDs except STANDBY LED and all segments of FLD turn ON.
Example of FLD all ON


VCD
DVD
CD
ALL DISCS
MPEG MULTI SHUFFLE
DMIX P.PCM REPEAT 1
Digital PGM A- B
DISC GROUP TITLE TRACK CHAP INDEX ANGLE NTSC HOUR MIN SEC

2-3-2. Main Unit Key Name Display and Key Code Display

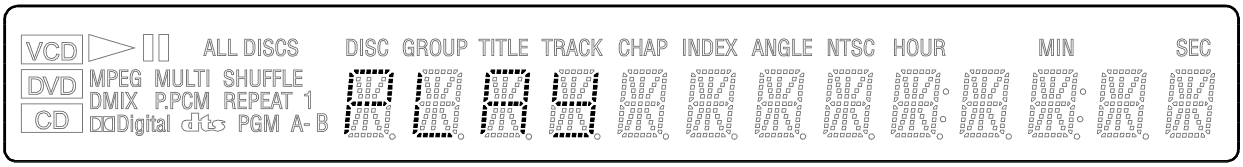
2-3-2-1. Transition Keys in Self Check Mode

- Keys on main unit except keys transited in self check

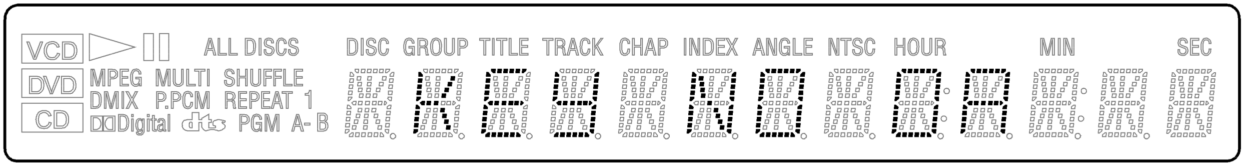
2-3-2-2. Operation and Display

When a key on the main unit is pressed in the Self Check mode, the name of that key is displayed on the FLD. Also, the key name display and the key code display can be switched with the DISPLAY key on the remote commander. “NOTHING” is displayed when nothing is entered. Also, VCD, DVD, and CD segments turn on when a communication error occurred.

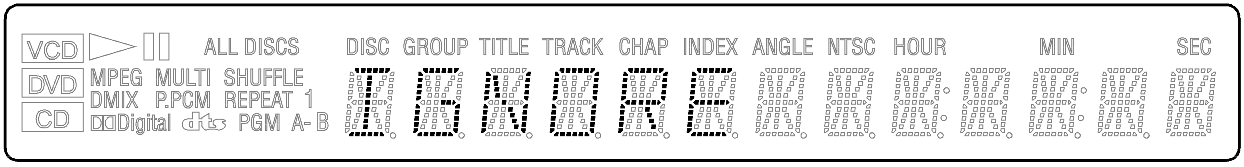
FLD display (at input of PLAY key on the main unit)


VCD
DVD
CD
ALL DISCS
MPEG MULTI SHUFFLE
DMIX P.PCM REPEAT 1
Digital PGM A- B
DISC GROUP TITLE TRACK CHAP INDEX ANGLE NTSC HOUR MIN SEC
PLAY

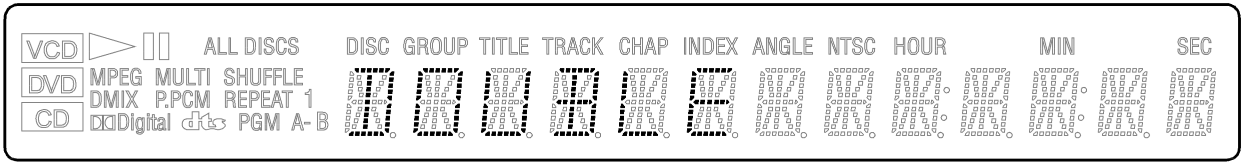
Key code display (at input of PLAY key, Key code: 0Ah)


VCD
DVD
CD
ALL DISCS
MPEG MULTI SHUFFLE
DMIX P.PCM REPEAT 1
Digital PGM A-B
DISC GROUP TITLE TRACK CHAP INDEX ANGLE NTSC HOUR MIN SEC
KEY NO 0A

At input of faulty voltage


VCD
DVD
CD
ALL DISCS
MPEG MULTI SHUFFLE
DMIX P.PCM REPEAT 1
Digital PGM A-B
DISC GROUP TITLE TRACK CHAP INDEX ANGLE NTSC HOUR MIN SEC
IGNORE

When two keys are pressed


VCD
DVD
CD
ALL DISCS
MPEG MULTI SHUFFLE
DMIX P.PCM REPEAT 1
Digital PGM A-B
DISC GROUP TITLE TRACK CHAP INDEX ANGLE NTSC HOUR MIN SEC
DOUBLE

2-3-3. Remote Commander Key Name Display and Key Code Display

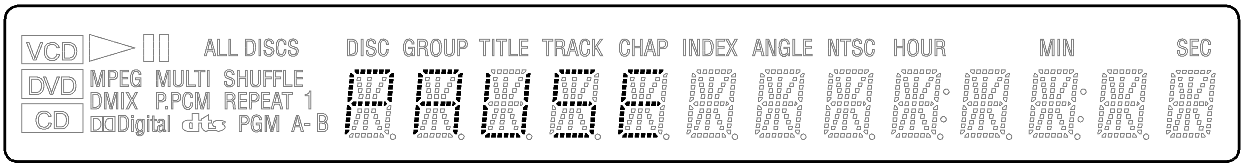
2-3-3-1. Transition Keys in Self Check Mode

- Remote commander keys except keys transited in self check

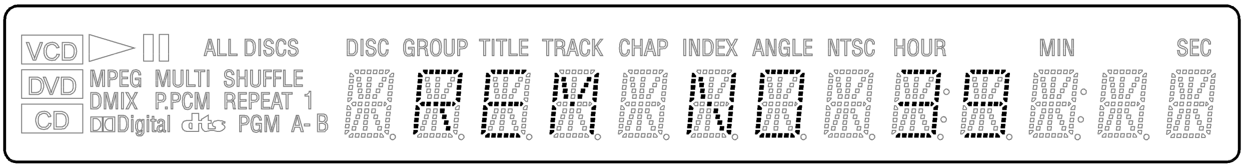
2-3-3-2. Operation and Display

When a key on the remote commander is pressed in the Self Check mode, the name of that key is displayed on the FLD. Also, the key name display and the key code display can be switched with the DISPLAY key on the remote commander. "NOTHING" is displayed when nothing is entered. Also, VCD, DVD, and CD segments turn on when a communication error occurred.

Remote commander key name display (at input of PAUSE key)


VCD
DVD
CD
ALL DISCS
MPEG MULTI SHUFFLE
DMIX P.PCM REPEAT 1
Digital PGM A-B
DISC GROUP TITLE TRACK CHAP INDEX ANGLE NTSC HOUR MIN SEC
PAUSE

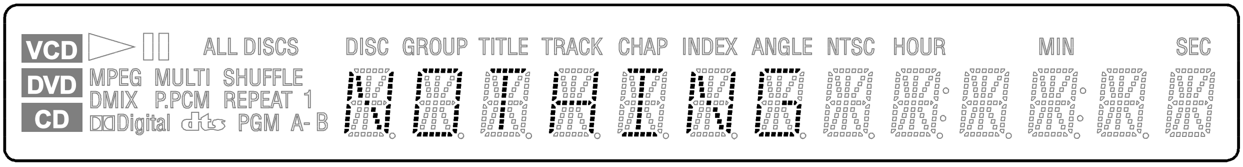
Remote commander key code display (at input of PAUSE key, Key code: 39h)


VCD
DVD
CD
ALL DISCS
MPEG MULTI SHUFFLE
DMIX P.PCM REPEAT 1
Digital PGM A-B
DISC GROUP TITLE TRACK CHAP INDEX ANGLE NTSC HOUR MIN SEC
REM NO 39

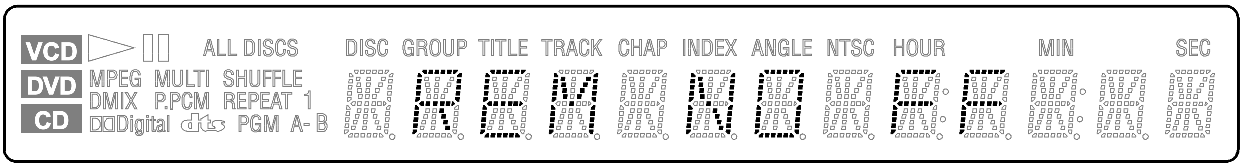
2-3-4. Communication Monitoring Display

The communication state is monitored and displayed while the key name on the main unit and the remote commander is displayed. When the communication to the System Controller failed, VCD, DVD, and CD segments turn on.

Communication error display (at no key input)


VCD
DVD
CD
ALL DISCS
MPEG MULTI SHUFFLE
DMIX P.PCM REPEAT 1
Digital PGM A- B
DISC GROUP TITLE TRACK CHAP INDEX ANGLE NTSC HOUR MIN SEC
NOTHING

Communication error display (at code display without input of the remote commander)


VCD
DVD
CD
ALL DISCS
MPEG MULTI SHUFFLE
DMIX P.PCM REPEAT 1
Digital PGM A- B
DISC GROUP TITLE TRACK CHAP INDEX ANGLE NTSC HOUR MIN SEC
REM NO FF

2-3-5. FLD Anode Test Display and SHUTTLE Click Operation Test

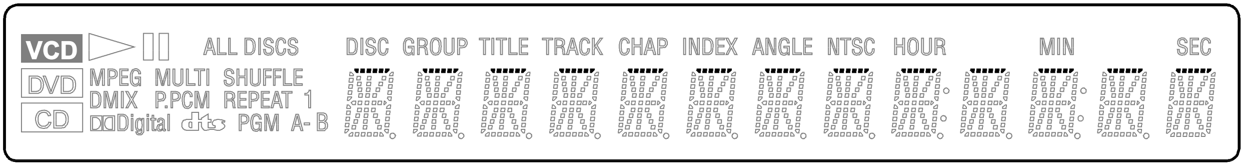
2-3-5-1. Transition Keys in Self Check Mode

- RIGHT on the main unit and the remote commander
- SHUTTLE on the remote commander during Anode Test display (This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

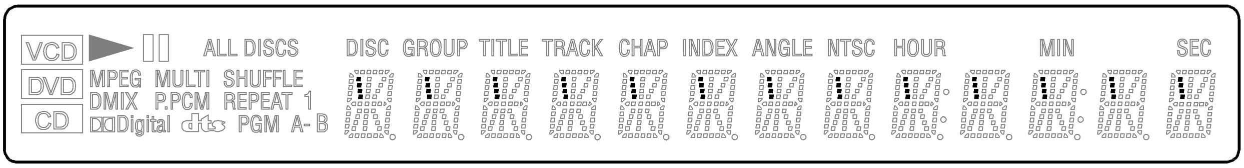
2-3-5-2. Operation and Display

The Self Check mode transits to this mode when RIGHT key is entered. Only the first segment of each grid of FLD turns on, and each time the SHUTTLE is entered, the segment of each grid is switched in order. When SHUTTLE input is clockwise, the segment switches in 1 → 2 → 3 direction, or counterclockwise it switches in 3 → 2 → 1 direction. This tests whether each segment turns on individually.

Display at the start of Anode Test


VCD
DVD
CD
ALL DISCS
MPEG MULTI SHUFFLE
DMIX P.PCM REPEAT 1
Digital PGM A- B
DISC GROUP TITLE TRACK CHAP INDEX ANGLE NTSC HOUR MIN SEC

↓ (Input in CW direction)


VCD
DVD
CD
ALL DISCS
MPEG MULTI SHUFFLE
DMIX P.PCM REPEAT 1
Digital PGM A- B
DISC GROUP TITLE TRACK CHAP INDEX ANGLE NTSC HOUR MIN SEC

2-3-6. FLD Grid Test Display and SHUTTLE Click Operation Test

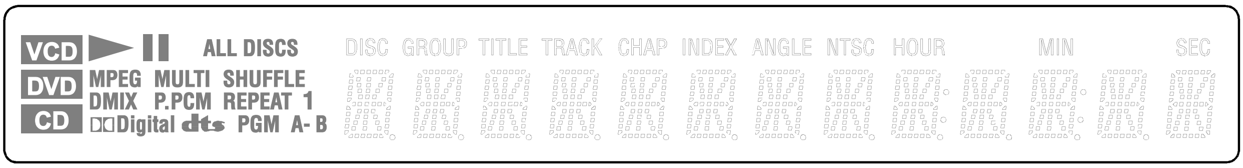
2-3-6-1. Transition Keys in Self Check Mode

- UP on the main unit and the remote commander
- SHUTTLE on the remote commander during Grid Test display (This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

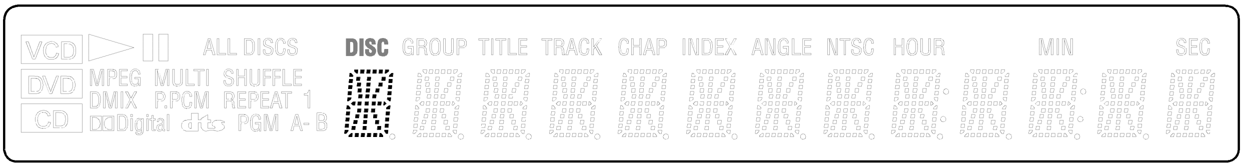
2-3-6-2. Operation and Display

The Self Check mode transits to this mode when UP key is entered. The first grid of FLD all turns on and other grids turn off. Each time the SHUTTLE is entered, the grid is switched in order. When SHUTTLE input is clockwise, the grid switches in 1 → 2 → 3 direction, or counterclockwise it switches in 3 → 2 → 1 direction. This tests whether each grid turns on individually.

Display at the start of Grid Test


VCD
DVD
CD
ALL DISCS
MPEG MULTI SHUFFLE
DMIX P.PCM REPEAT 1
Digital dts PGM A- B
DISC GROUP TITLE TRACK CHAP INDEX ANGLE NTSC HOUR MIN SEC

↓ (Input in CW direction)


VCD
DVD
CD
ALL DISCS
MPEG MULTI SHUFFLE
DMIX P.PCM REPEAT 1
Digital dts PGM A- B
DISC GROUP TITLE TRACK CHAP INDEX ANGLE NTSC HOUR MIN SEC

2-3-7. LED Test Display

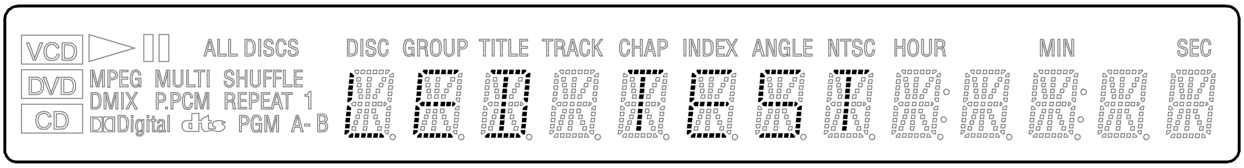
2-3-7-1. Transition Keys in Self Check Mode

- DOWN on the main unit and the remote commander
- SHUTTLE on the remote commander during LED Test display (This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

2-3-7-2. Operation and Display

LED is switched in order by the input of JOG/SHUTTLE. Also, LED ON/OFF is switched by the input of same key as the function that turns on the LED concerned.

FLD display during LED Test


VCD
DVD
CD
ALL DISCS
MPEG MULTI SHUFFLE
DMIX P.PCM REPEAT 1
Digital dts PGM A- B
DISC GROUP TITLE TRACK CHAP INDEX ANGLE NTSC HOUR MIN SEC
LED TEST

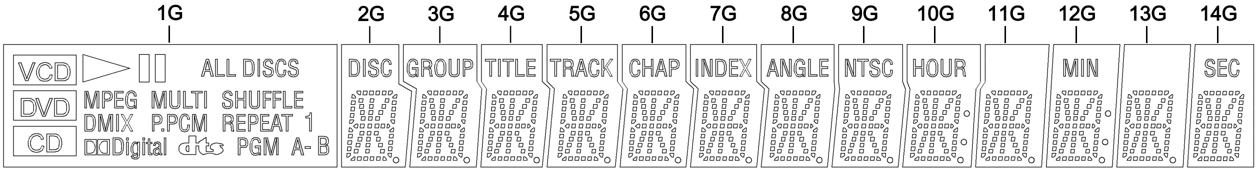
2-3-8. Beep Sound Test

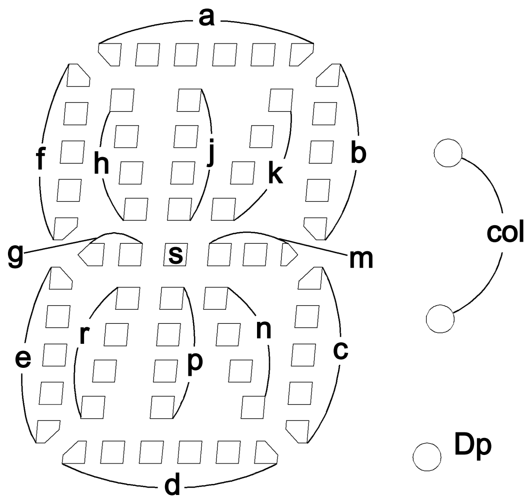
2-3-8-1. Transition Keys in Self Check Mode

- Input of a key on main unit

2-3-8-2. Operation and Display

In the Self Check mode, each time a key on the main unit is entered, a beep sound of 1kHz (100ms) is generated.


1G
2G
3G
4G
5G
6G
7G
8G
9G
10G
11G
12G
13G
14G
VCD
DVD
CD
ALL DISCS
MPEG MULTI SHUFFLE
DMIX P.PCM REPEAT 1
Digital dts PGM A- B
DISC
GROUP
TITLE
TRACK
CHAP
INDEX
ANGLE
NTSC
HOUR
MIN
SEC


a
f
h
j
k
b
g
s
m
col
e
r
p
n
c
Dp
d

(1G~12G)

ANODE CONNECTION

	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G	14G
P1	VCD	a	a	a	a	a	a	a	a	a	a	a	a	a
P2	▷	h	h	h	h	h	h	h	h	h	h	h	h	h
P3	▯▯	j	j	j	j	j	j	j	j	j	j	j	j	j
P4	ALL DISCS	k	k	k	k	k	k	k	k	k	k	k	k	k
P5	DVD	b	b	b	b	b	b	b	b	b	b	b	b	b
P6	MPEG	f	f	f	f	f	f	f	f	f	f	f	f	f
P7	MULTI	m	m	m	m	m	m	m	m	m	m	m	m	m
P8	SHUFFLE	s	s	s	s	s	s	s	s	s	s	s	s	s
P9	DMIX	g	g	g	g	g	g	g	g	g	g	g	g	g
P10	P.PCM	e	e	e	e	e	e	e	e	e	e	e	e	e
P11	REPEAT	n	n	n	n	n	n	n	n	n	n	n	n	n
P12	1	p	p	p	p	p	p	p	p	p	p	p	p	p
P13	B	r	r	r	r	r	r	r	r	r	r	r	r	r
P14	A-	c	c	c	c	c	c	c	c	c	c	c	c	c
P15	PGM	d	d	d	d	d	d	d	d	d	d	d	d	d
P16	dts	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	-
P17	DD Digital	-	-	-	-	-	-	-	-	col	-	col	-	-
P18	CD	DISC	GROUP	TITLE	TRACK	CHAP	INDEX	ANGLE	NTSC	HOUR	-	MIN	-	SEC

6-11. TROUBLESHOOTING

6-11-1. Cannot Enter Test Mode

You cannot enter the Test mode when either button has been pressed by any reason with the board assembled in the front panel. In this state, the power does not turn on even under normal condition (the set is kept in standby state), and also no button is active and the remote commander is not accepted. In this case, disconnect the MB-98 board, and with the SELF CHECK (⑩ pin) of IF CON (IC404) on the IF-81 board kept in low state, supply AC, and the Test mode will be forcibly activated. The IF CON (IC404) checks the SELF CHECK port only after the power on reset (only at AC supply, not in standby state). If any button is pressed, its name is displayed on the fluorescent display tube. But, if other than "NOTHING" is displayed though no button is pressed, it means that any button has been pressed.

6-11-2. Faults in Test Mode (MB-98 Board)

1. Test mode menu is not displayed

- Board visual check

  Check main IC's, SYSTEM CONTROL (IC103), ROM (IC107 or IC108), AVD (IC503), and ARP&SERVO (IC302), for mounting condition, direction, or evidence of short between pins, or soldering failure. Also, compare with good board to check if there are missing capacitors or resistors.
- Clock signal check

  Measure the clock frequency at CPUCK ((77) pin) of the SYSTEM CONTROL (IC103) using an oscilloscope.
  If 33 MHz is outputted, an access to the ROM is normal, and then check the items in 1-2.
  In the case of 8.25 MHz output, check the items in 1-1.
  If it is fixed to "H" or "L", the X101 or SYSTEM CONTROL (IC103) will be faulty.

1-1. CPUCK (33 MHz) is not outputted

- Power supply voltage check

  Check the power connectors of the boards or power input pins of the IC's for voltage. Check the IC's in order of SYSTEM CONTROL (IC103), ROM (IC107 or IC108), AVD (IC503), and ARP&SERVO (IC302). If correct voltage is not outputted, the power line will be shorted, or soldering or IC will be faulty.
- Reset signal check

  Check that the XFRRST ((76) pin) of SYSTEM CONTROL (IC103) is "H" (3.3 V). If not "H", a soldering failure of that line, a shot with other line, or faulty SYSTEM CONTROL (IC103) is doubtful.
- XRD, XWRH, and CS0X signals check

  Using an oscilloscope, measure the XRD ((70) pin), XWRH ((71) pin), and CS0X ((58) pin) of the SYSTEM CONTROL (IC103) to check if they are fixed to "L" (0 V) or "H" (3.3 V), or if they are on the intermediate potential between "L" and "H". If they are fixed to "L" or "H", or on the intermediate potential, a soldering failure of that line, a shot with other line, or faulty SYSTEM CONTROL (IC103) is doubtful.
- HA [0 – 21] and HD [0 – 15] signals check

  Using an oscilloscope, measure the HA [0 – 21] ((102) – (109), (111) – (118), (120), ① – ⑤ pins) and HD [0 – 15] ((85) – (100) pins) of the SYSTEM CONTROL (IC103) to check if they are fixed to "L" (0 V) or "H" (3.3 V), or if HA is on the intermediate potential between "L" and "H" (HD is on intermediate potential in normal state), or if same waveform as that of adjacent pins is measured. In case of "L" or "H", intermediate potential, or same waveform, a soldering failure of that line, a shot with other line, or faulty SYSTEM CONTROL (IC103) is doubtful.

1-2. CPUCK (33 MHz) is outputted (communication with ROM is normal)

- AVD (IC503) check

  Using an oscilloscope, measure the SDCLKO ((149) pin) of the AVD (IC503) to check that 95 MHz is outputted. If not outputted, a short of 27 MHz line across CLKI ((180) pin) and SCLKIN ((182) pin), IC mounting failure, or faulty AVD (IC503) is doubtful. If 27 MHz is outputted, the communication between SYSTEM CONTROL (IC103) and AVD (IC503) is disabled, and therefore check the following items, particularly the AVD (IC503).
- WAIT signal check

  Using an oscilloscope, measure the XWAIT ((67) pin) of the SYSTEM CONTROL (IC103) to check if it is fixed to "L" (0 V) or on the intermediate potential. In case of "L" or intermediate potential, examine CS2X – CS5X ((60) – (63) pins) to check if any pin is fixed to "L".
  For the CS2X and CS3X, AVD (IC503) mounting failure or faulty IC is doubtful.
  For the CS4X and CS5X, ARP&SERVO (IC302) mounting failure or faulty IC is doubtful.
  If CS2X – CS5X are not "L", or they are sometimes on intermediate potential, a soldering failure of XWAIT line, a short with other line, or faulty SYSTEM CONTROL (IC103) is doubtful.
- INT signal check

  Using an oscilloscope, measure the INT0 – 2, 4 – 6 (⑯ – ⑱ pins, ⑳ – ㉒ pins) of the SYSTEM CONTROL (IC103) to check if INT0 – 2, and 6 are fixed to "L" (0 V) and INT5 is fixed to "H" (3.3 V), or they are on intermediate potential. In case of "L", "H", or intermediate potential, a soldering failure of IC's connected to that line, a short with other line, faulty SYSTEM CONTROL (IC103), or faulty each IC is doubtful.
  INT0 : AVD (IC503)
  INT1, INT2 : ARP&SERVO (IC302)
  INT5, INT6 : AUDIO DSP (IC701)
- CSnX signals check

  Using an oscilloscope, measure the CX0X – CX7X ((58) – (63), (65), (66) pins) of the SYSTEM CONTROL (IC103) to check if they are fixed to "L" (0 V), or two or more CS's sometime go "L", or on intermediate potential. In case of fixed "L", two or more CS's on "L" or intermediate potential, a soldering failure of IC's connected to that line, a short with other line, faulty SYSTEM CONTROL (IC103), or faulty each IC is doubtful.
  CS0X : ROM (IC107 or IC108)
  CS2X, CS3X: AVD (IC503)
  CS4X, CS5X: ARP&SERVO (IC302)
- Other CS signals check

  Using an oscilloscope, measure the VESCS/X39CS ((80) pin) and XDACS ((79) pin) of the SYSTEM CONTROL (IC103) to check if they are fixed to "L". If fixed, a soldering failure of that line, a short with other line, or faulty SYSTEM CONTROL (IC103) is doubtful.

If the above checking could not find a fault, check the outputted CS signal. If CS signal other than CS0X is outputted, a mounting failure of each IC or faulty IC that corresponds to active CS signal is doubtful.

CS2X, CS3X: AVD (IC503)
CS4X, CS5X: ARP&SERVO (IC302)

2. Test mode menu is displayed, but operation stops when a menu is selected

Using an oscilloscope, measure the PLCKO ((95) pin) of the ARP& SERVO (IC302) to check if it is fixed to "L" (0 V) or "H" (3.3 V). If fixed to "L" or "H", the ARP&SERVO (IC302) is faulty. If not fixed, check the items in 1-2. in order.

3. Specific item failed in Diag All Check

A mounting failure of IC or faulty IC for that item is doubtful.
If “1901NG” is displayed, a loose connection of CN801, mounting failure of AUDIO DSP (IC701), or faulty IC is doubtful.

4. Picture and sound are not outputted

Check the CN801 for connection, and the flat cable for damage or loose connection.

5. Picture is outputted, but sound is not outputted

A mounting failure of AUDIO DSP (IC801) or AUDIO DAC (IC802, IC803), power supply failure, or faulty IC is doubtful.

6. Sound is outputted, but picture is not outputted

Using an oscilloscope, measure the (63), (66), (69), (74), (77), and (80) pins of AVD (IC503) to check if analog signals are outputted respectively. If not outputted, a soldering failure of that line, a short with other line, missing capacitor or resistor, or faulty AVD is doubtful.

6-11-3. Drive Auto Adjustment stops by an error

Faulty analog circuits of ARP&SERVO (IC302) or faulty peripheral circuits of DIGITAL SERVO (IC202) on the MB-98 board, faulty optical pickup, or loose connection of flat cable is doubtful.

6-11-4. Power is Supplied but Unstable

If Syscon Diagnosis completed successfully, basically the boards other than MB-98 board, connection, optical pickup, or mechanical deck will be faulty.

1. Red LED does not light when AC is supplied

Check if the specified voltage is outputted from the EVER +5 V (⑦ pin) of CN201 in the power supply block. If not outputted, the power supply block will be faulty.

2. At POWER button ON, LED does not light in green even once, but kept in red (standby state)

Check if the specified voltage is outputted from the EVER +5 V (⑦ pin) of CN201 in the power supply block. If not outputted, the power supply block will be faulty.
When press the POWER button, check the P-CONT (④ pin) of CN401 on the IF-81 board if it becomes “H”. If not “H”, a soldering failure of that line, a short with other line, missing capacitor or resistor, faulty AVD (IC503), loose connection between power supply block and IF-81 board, loose connection of connectors, faulty power supply block, or faulty IF-81 board is doubtful.

3. At POWER button ON, LED lights in green but returns to red (standby state) after several seconds (e.g. it returns to standby state after “SONY DVD” was displayed)

There is no regularity between faulty parts and timing when the set returns to the standby state).
Check if the specified voltage is outputted from the power supply block. If not outputted, the power supply block will be faulty.
Check the XFRRST (⑨ pin) of CN101 on the MB-98 board if it is fixed to “L”, or the XIBUSY (⑩ pin), XIFCS (⑪ pin), SI0 (⑫ pin), SO0 (⑬ pin) and SC0 (⑭ pin) of CN101 if they are fixed to “L” or “H”.
If fixed to “L” or “H”, a soldering failure of that line, a short with other line, missing capacitor or resistor, or faulty SYSTEM CONTROL (IC103) is doubtful.
If not fixed to “L” or “H”, loose connection between power supply block and IF-81 board or between IF-81 board and MB-98 board, loose connection of connectors, or faulty IF-81 board is doubtful.

4. At POWER button ON, LED lights in green but fluorescent display tube does not light

Loose connection between power supply block and IF-81 board, loose connection of connectors, or faulty IF-81 board is doubtful.

5. Picture and sound are not outputted

Loose connection between power supply block and IF-81 board or between IF-81 and AV-57 board or between AV-57 board and MB-98 board, loose connection of connectors, or faulty AV-57 board is doubtful.

6. Picture is out outputted correctly

A mounting failure of BNR (IC601) on the MB-98 board, or faulty AVD (IC503) or ARP&SERVO (IC302), or faulty 27 MHz output (frequency, waveform) from 27-1OUT (③ pin) of PLL (IC102) is doubtful.

6-11-5. Power is not Supplied

1. Red LED does not light when AC is supplied

The power (EVER +5 V) is not supplied to the IF CON (IC404) on the IF-81 board.
The X401 does not oscillate.

2. At POWER button ON, LED is kept in red (standby state)

Any button has been pressed.
The voltage at PONCHK (㉚ pin) of the IF CON (IC404) on the IF-80 board exceeds 0.5 V.

3. At POWER button ON, LED lights in green but returns to red (standby state) after several seconds

The PONCHK (㉚ pin) of the IF CON (IC404) on the IF-81 board is abnormal (slow rising from 0.5 V to more than 1.5 V, or voltage not rising to more than 1.5 V).
The SYSTEM CONTROL (IC103) on the MB-98 board is faulty.

SECTION 7
ELECTRICAL ADJUSTMENT

In making adjustment, refer to 7-3. Adjustment Related Parts Arrangement.

Note: During diagnostic check, the characters and color bars can be seen only with the NTSC monitor. Therefore, for diagnostic check, use the monitor that supports both NTSC and PAL modes.
Use the reference disc for PAL for check, and use the reference disc for NTSC for adjustment.

This section describes procedures and instructions necessary for adjusting electrical circuits in this set.

Instruments required:

1) Color monitor TV
2) Oscilloscope 1 or 2 phenomena, band width over 100 MHz, with delay mode
3) Frequency counter (over 8 digits)
4) Digital voltmeter
5) Standard commander (RMT-D130A/D130O/D130P)
6) DVD reference disc
   HLX-501 (J-6090-071-A) (dual layer) (NTSC)
   HLX-503 (J-6090-069-A) (single layer) (NTSC)
   HLX-504 (J-6090-088-A) (single layer) (NTSC)
   HLX-505 (J-6090-089-A) (dual layer) (NTSC)
   HLX-506 (J-6090-077-A) (single layer) (PAL)
   HLX-507 (J-6090-078-A)(dual layer) (PAL)
7) SACD reference disc
   HLXA-509 (J-6090-090-A)
8) Extention Cable (J-6090-107-A)

7-1. POWER SUPPLY ADJUSTMENT

1. Power Supply Check (MPN4801/MPN4901 Boards)

Mode	E-E
Instrument	Digital voltmeter
SW +3.3 V Check	
Test point	CN101 pin ⑧, ⑨
Specification	3.45 ± 0.2 Vdc
EVER +5 V Check	
Test point	CN101 pin ⑦
Specification	5.1 ± 0.2 Vdc
SW +5 V Check	
Test point	CN101 pin ⑤, ⑥
Specification	5.1 ± 0.2 Vdc
SW +11 V Check	
Test point	CN101 pin ③, ④
Specification	11.0 ± 1.0 Vdc
SW –11 V Check	
Test point	CN101 pin ⑭, ⑮
Specification	–11.0 ± 1.0 Vdc

Checking method:

1) Confirm that each voltage satisfies the specification.

2. +11 V Adjustment (MPN4801/MPN4901 Boards)

Mode	PB
Measuring Instrument	Digital voltmeter
Measurement Point	CN101 pin ③, ④
Adjusting Element	VR101
Specified Value	11.0 ± 1.0 V

3. +5 V Adjustment (MPN4801/MPN4901 Boards)

Mode	PB
Measuring Instrument	Digital voltmeter
Measurement Point	CN101 pin ⑦
Adjusting Element	VR301
Specified Value	5.1 ± 0.2 V

4. –11 V Adjustment (MPN4801/MPN4901 Boards)

Mode	PB
Measuring Instrument	Digital voltmeter
Measurement Point	CN101 pin ⑭, ⑮
Adjusting Element	VR401
Specified Value	–11.0 ± 1.0 V

7-2. ADJUSTMENT OF VIDEO SYSTEM

1. Video Level Adjustment (MB-98 Board)

<Purpose>

This adjustment is made to satisfy the NTSC/PAL standard, and if not adjusted correctly, the brightness will be too large or small.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	LINE OUT (VIDEO) connector (75 Ω terminated)
Instrument	Oscilloscope
Adjusting element	RV501
Specification	$1.0 ^{+0.04}_{-0.02}$ Vp-p

Adjusting method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Adjust the RV501 to attain $1.0 ^{+0.04}_{-0.02}$ Vp-p.

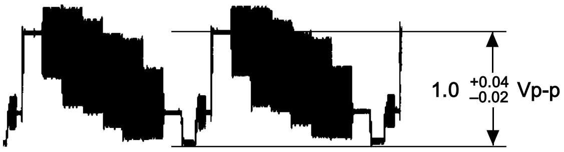


Figure 7-1

2. Checking S Video Output S-Y

<Purpose>

Check S-terminal video output. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with a S-terminal cable.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.0 ± 0.05 Vp-p

Checking method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Confirm that the S-Y level is 1.0 ± 0.05 Vp-p.

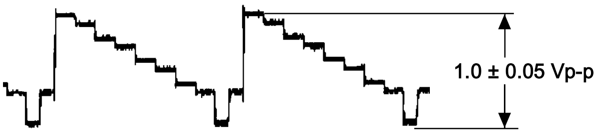


Figure 7-2

3. Checking S Video Output S-C

<Purpose>

This checks whether the S-C satisfies the NTSC/PAL Standard. If it is not correct, the colors will be too dark or light.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-C) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	A = 286 ± 30 mVp-p (NTSC) A = 300 ± 100 mVp-p (PAL)

Checking method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Confirm that the S-C burst is “A”.

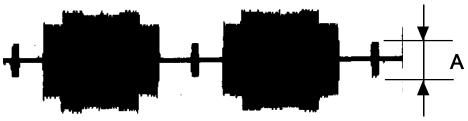


Figure 7-3

4. Checking Component Video Output Y (US, Canadian, Australian, PX Model)

<Purpose>

This checks component video output Y. If it is incorrect, correct brightness will not be attained when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.0 ± 0.05 Vp-p

Checking method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Confirm that the Y level is 1.0 ± 0.05 Vp-p.

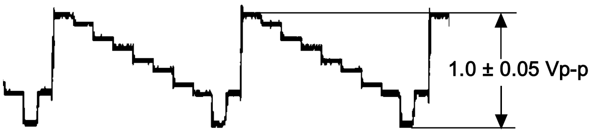


Figure 7-4

5. Checking Component Video Output B-Y (US, Canadian, Australian, PX Model)

<Purpose>

This checks component video output B-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (P_B) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 50 mVp-p

Checking method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Confirm that the B-Y level is 700 ± 50 mVp-p.

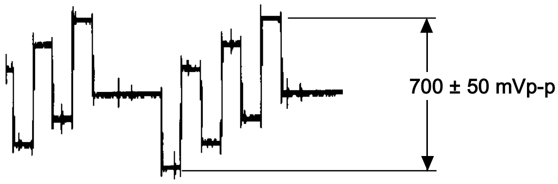


Figure 7-5

6. Checking Component Video Output R-Y (US, Canadian, Australian, PX Model)

<Purpose>

This checks component video output R-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (P_R) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 50 mVp-p

Checking method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Confirm that the R-Y level is 700 ± 50 mVp-p.

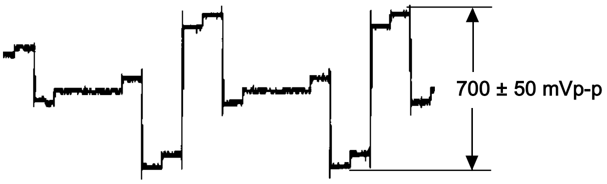


Figure 7-6

7. Checking RGB Output R (AEP, UK Model)

<Purpose>

This checks RGB output R. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with an EURO AV connecting cord.

Mode	In test mode, Push $\boxed{0}$ for Syscon Diagnosis and push $\boxed{7}$ for Video and push $\boxed{5}$ for RGB out
Signal	Color bars
Test point	LINE 1 (RGB)-TV connector pin ⑮ (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 50 mVp-p

Checking method:

1) Confirm that the R level is 700 ± 50 mVp-p.

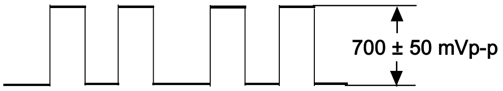


Figure 7-7

8. Checking RGB Output G (AEP, UK Model)

<Purpose>

This checks RGB output G. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with an EURO AV connecting cord.

Mode	In test mode, Push $\boxed{0}$ for Syscon Diagnosis and push $\boxed{7}$ for Video and push $\boxed{5}$ for RGB out
Signal	Color bars
Test point	LINE 1 (RGB)-TV connector pin ⑪ (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 50 mVp-p

Checking method:

1) Confirm that the G level is 700 ± 50 mVp-p.

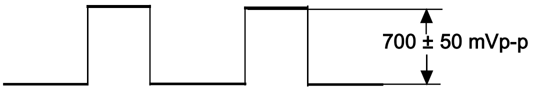


Figure 7-8

9. Checking RGB Output B (AEP, UK Model)

<Purpose>

This checks RGB output B. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with an EURO AV connecting cord.

Mode	In test mode, Push 0 for Syscon Diagnosis and push 7 for Video and push 5 for RGB out
Signal	Color bars
Test point	LINE 1 (RGB)-TV connector pin ⑦ (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 50 mVp-p

Checking method:

1) Confirm that the B level is 700 ± 50 mVp-p.

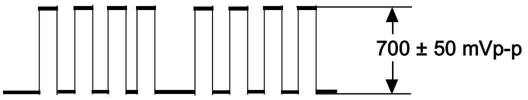
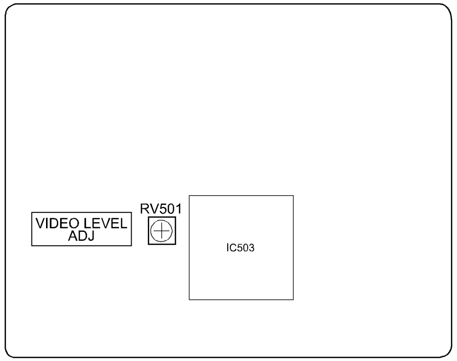


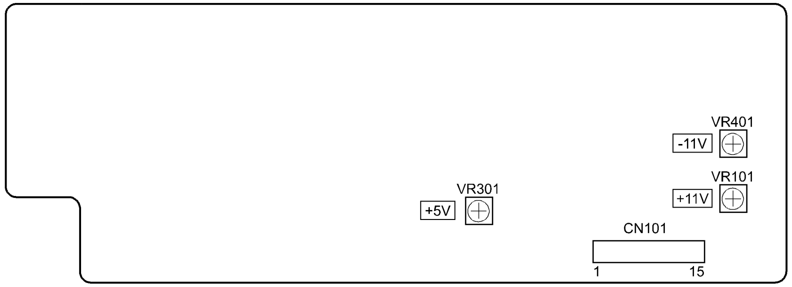
Figure 7-9

7-3. ADJUSTMENT RELATED PARTS ARRANGEMENT

MB-98 BOARD (SIDE A)


VIDEO LEVEL
ADJ
RV501
IC503

MPN4801/MPN4901 BOARDS (SIDE A)


VR401
-11V
VR101
+11V
VR301
+5V
CN101
1
15

SECTION 8
REPAIR PARTS LIST

8-1. EXPLODED VIEWS

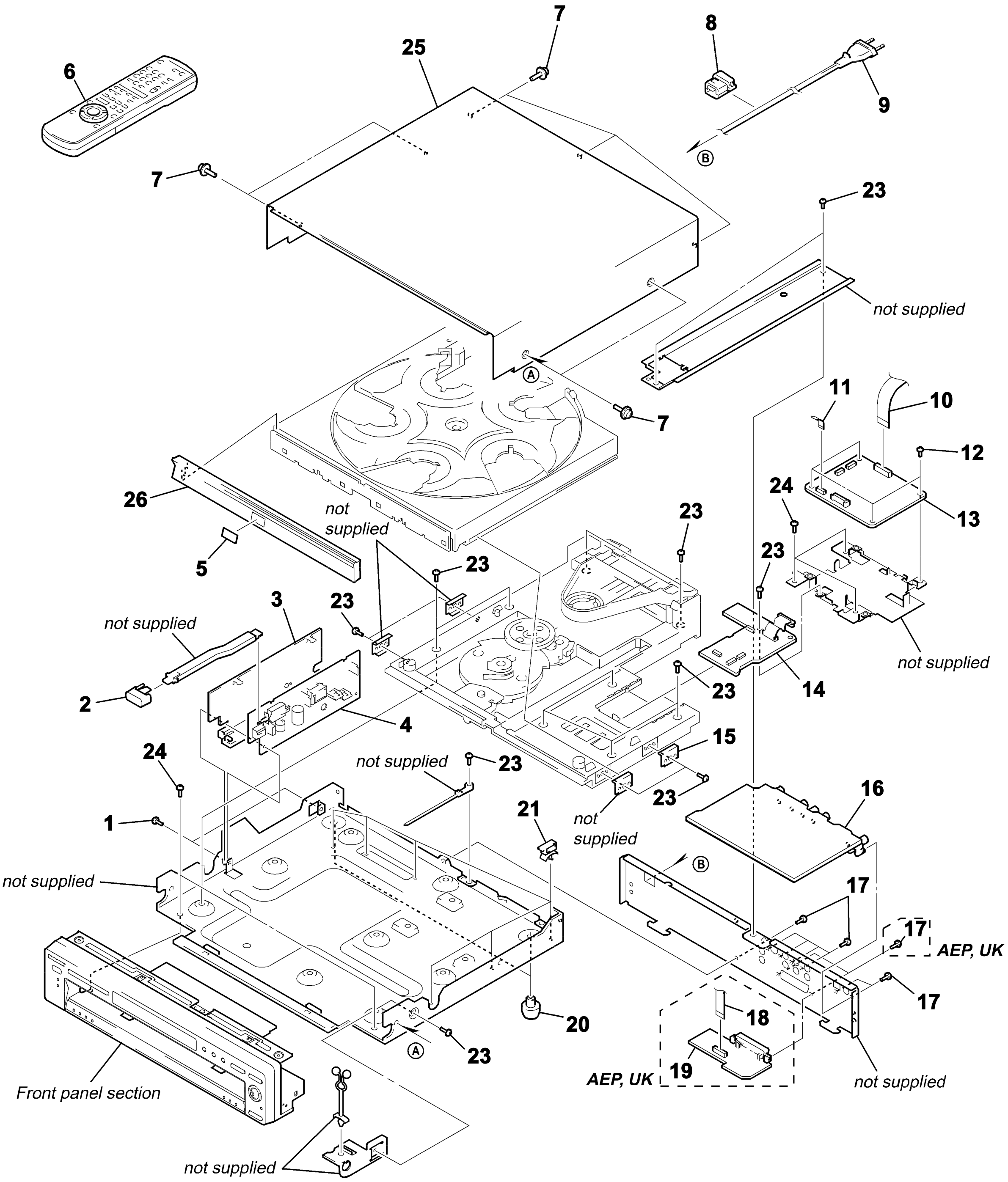
NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories and packing materials are given in the last of the electrical parts list.
- Abbreviation
  AUS: Australian
  CND: Canadian

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

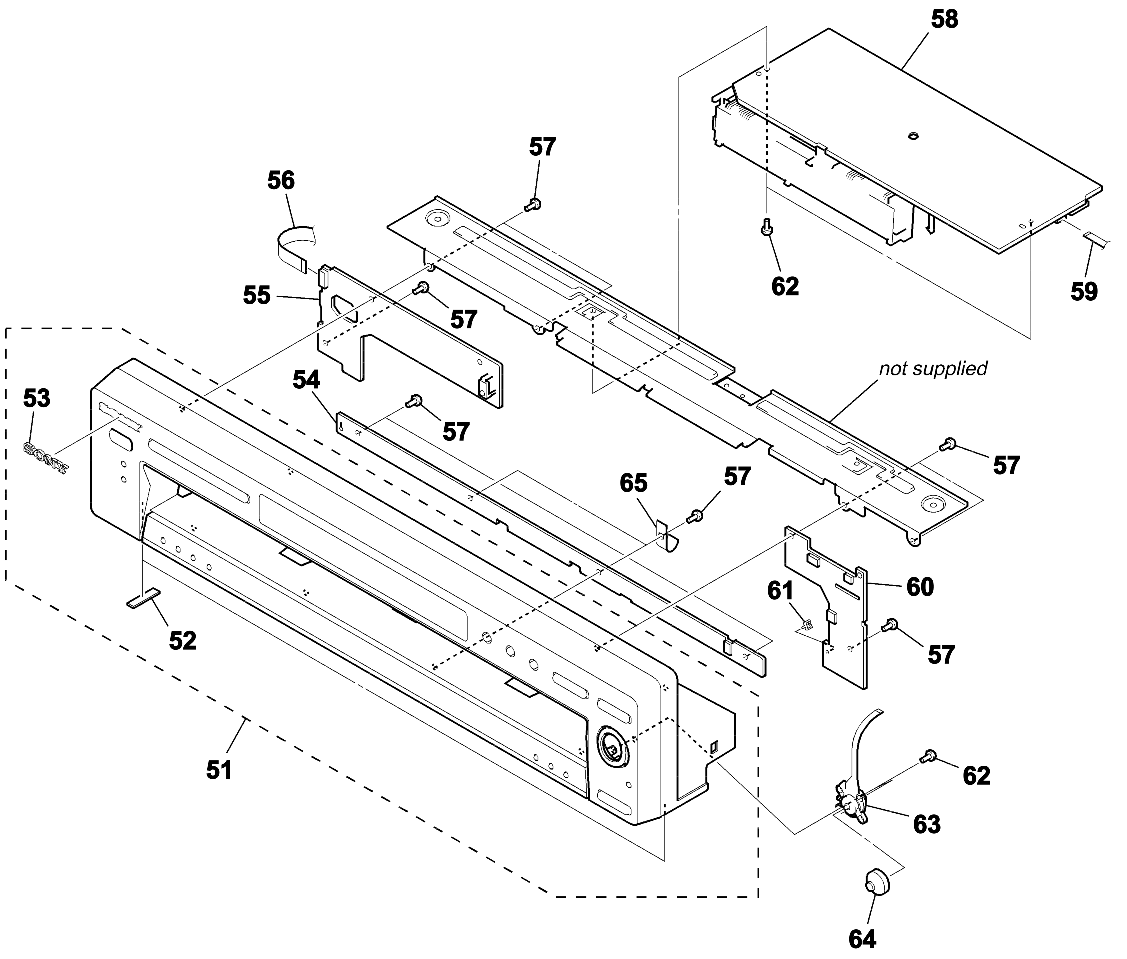
Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

8-1-1. MAIN ASSEMBLY


7
8
25
6
9
Ⓑ
7
23
not supplied
Ⓐ
11
10
7
12
24
13
26
not
supplied
23
5
23
23
3
23
not supplied
14
not supplied
2
23
4
15
24
not supplied
23
23
16
1
21
not
supplied
Ⓑ
not supplied
17
17
AEP, UK
17
18
20
23
Ⓐ
AEP, UK
19
Front panel section
not supplied
not supplied

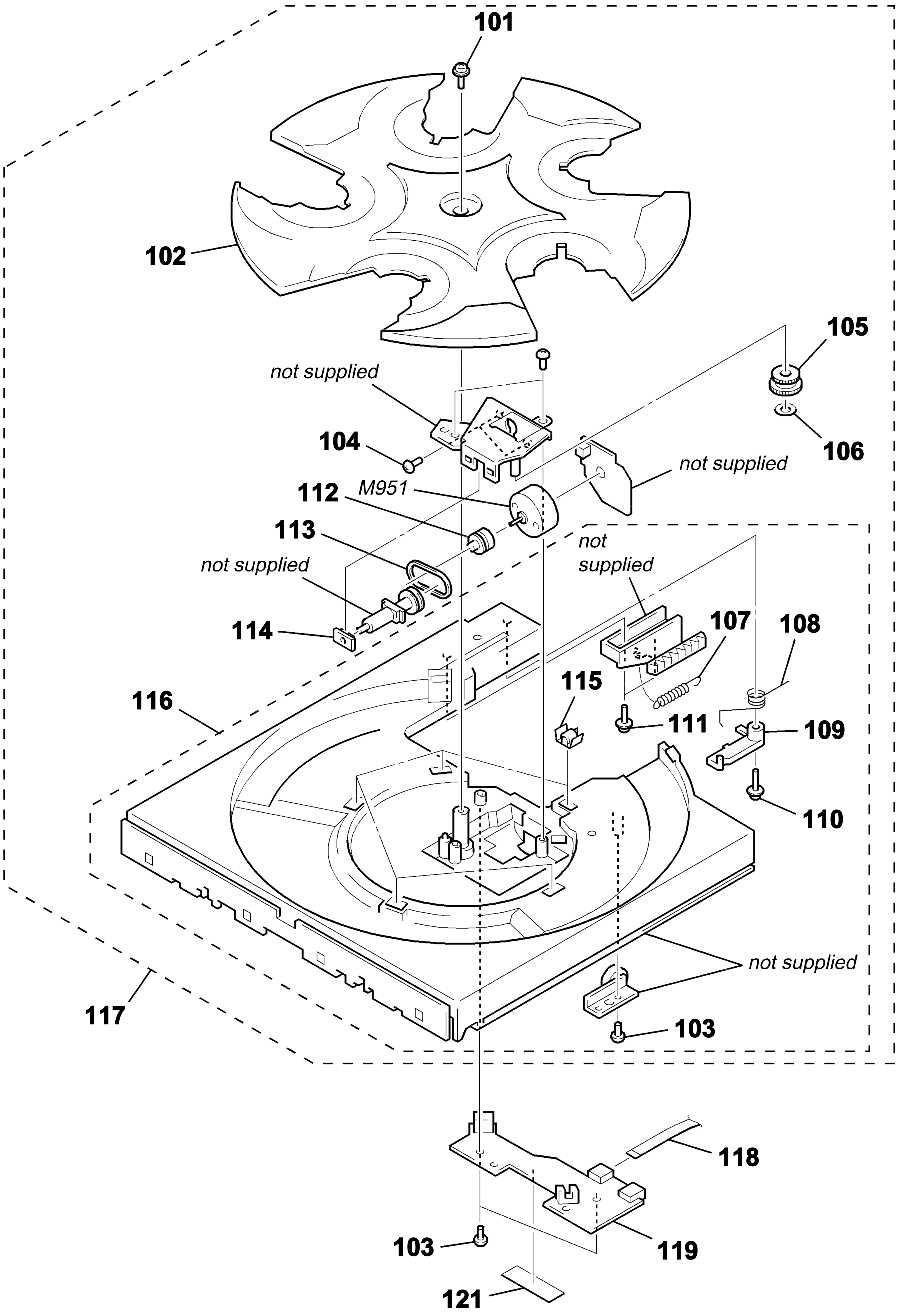
Ref. No.	Part No.	Description	Remark
1	3-062-340-01	+BV SUMITITE B3 EXT W (3X8)	
2	3-067-232-11	BUTTON (POWER) (BLACK)	
2	3-067-232-21	BUTTON (POWER) (GREY)	
3	3-061-954-01	COVER, PWB	
* 4	1-468-590-11	POWER BLOCK (MPN4901)	(AEP, UK, AUS, PX)
* 4	1-468-591-11	POWER BLOCK (MPN4801) (US, CND)	
5	3-067-237-01	EMBLEM (V), DVD (BLACK)	
5	3-067-237-11	EMBLEM (V), DVD (GREY)	
6	1-476-604-21	COMMANDER, STANDARD (RMT-D130A)	(US, CND, PX)
6	1-476-605-41	COMMANDER, STANDARD (RMT-D130P)	(AEP, UK)
6	1-476-605-51	COMMANDER, STANDARD (RMT-D130O)	(AUS)
7	3-710-901-41	SCREW, TAPPING (BLACK)	
7	3-710-901-61	SCREW, TAPPING (GREY)	
8	4-966-267-12	BUSHING (FBS001), CORD	
⚠9	1-769-744-91	CORD, POWER (AEP, UK, PX)	
⚠9	1-783-531-31	CORD, POWER (US, CND)	
⚠9	1-790-588-11	CORD, POWER (AUS)	
10	1-757-749-11	CABLE, FLEXIBLE FLAT (FAM-008)	
11	1-757-750-11	CABLE, FLEXIBLE FLAT (FCM-014)	
12	3-055-791-01	SUMITITE (B3) (RING), +BV	
* 13	A-6065-678-A	MB-98 BOARD, COMPLETE (US, CND, PX)	
* 13	A-6065-685-A	MB-98 BOARD, COMPLETE (AEP, UK)	
* 13	A-6065-692-A	MB-98 BOARD, COMPLETE (AUS)	
* 14	A-6065-680-A	CN-142 BOARD, COMPLETE	(US, CND, AUS, PX)
* 14	A-6065-687-A	CN-142 BOARD, COMPLETE (AEP, UK)	
15	4-957-280-31	BRACKET (GUIDE B1)	
* 16	A-6065-679-A	AV-57 BOARD, COMPLETE	(US, CND, AUS, PX)
* 16	A-6065-686-A	AV-57 BOARD, COMPLETE (AEP, UK)	
17	3-970-608-51	SUMITITE (B3), +BV	
18	1-757-748-11	CABLE, FLEXIBLE FLAT (FAE-006) (AEP, UK)	
* 19	A-6065-682-A	ER-16 BOARD, COMPLETE (AEP, UK)	
20	3-957-819-01	FOOT	
21	4-215-927-01	CLAMP	
23	3-970-608-11	SUMITITE (B3), +BV	
24	3-970-608-01	SUMITITE (B3), +BV	
25	3-070-697-01	CASE, UPPER (BLACK)	
25	3-070-697-11	CASE, UPPER (GREY)	
26	3-066-134-01	COVER, TRAY (BLACK)	
26	3-066-134-11	COVER, TRAY (GREY)	

8-1-2. FRONT PANEL ASSEMBLY



	Ref. No.	Part No.	Description	Remark
	51	X-3951-416-1	FRONT PANEL ASSY (BLACK)	
	51	X-3951-417-1	FRONT PANEL ASSY (GREY)	
	52	3-059-349-11	LEG CUSHION	
	53	3-943-995-01	EMBLEM (NO.5), SONY (BLACK)	
	53	3-943-995-31	EMBLEM (NO.5), SONY (GREY)	
*	54	A-6065-675-A	SW-353 BOARD, COMPLETE (US, CND, AUS, PX)	
*	54	A-6065-691-A	SW-353 BOARD, COMPLETE (AEP, UK)	
*	55	A-6065-674-A	FR-178 BOARD, COMPLETE (US, CND, AUS, PX)	
*	55	A-6065-690-A	FR-178 BOARD, COMPLETE (AEP, UK)	
	56	1-757-753-11	CABLE, FLEXIBLE FLAT (FIR-001)	
	57	4-951-620-01	SCREW (2.6X8), +BVTP	
*	58	A-6065-681-A	IF-81 BOARD, COMPLETE (US, CND, AUS, PX)	
*	58	A-6065-688-A	IF-81 BOARD, COMPLETE (AEP, UK)	
	59	1-757-752-11	CABLE, FLEXIBLE FLAT (FIF-001)	
*	60	A-6065-673-A	FL-119 BOARD, COMPLETE (US, CND, AUS, PX)	
*	60	A-6065-689-A	FL-119 BOARD, COMPLETE (AEP, UK)	
*	61	3-742-419-01	CLAMP, HARNESS	
	62	3-970-608-11	SUMITITE (B3), +BV	
	63	1-786-131-11	SWITCH, TACTILE	
	64	3-067-238-11	CURSOR STICK (BLACK)	
	64	3-067-238-21	CURSOR STICK (GREY)	
	65	3-067-741-01	LEAF SPRING (GROUND), BOTTOM	

8-1-3. TABLE ASSEMBLY


101
102
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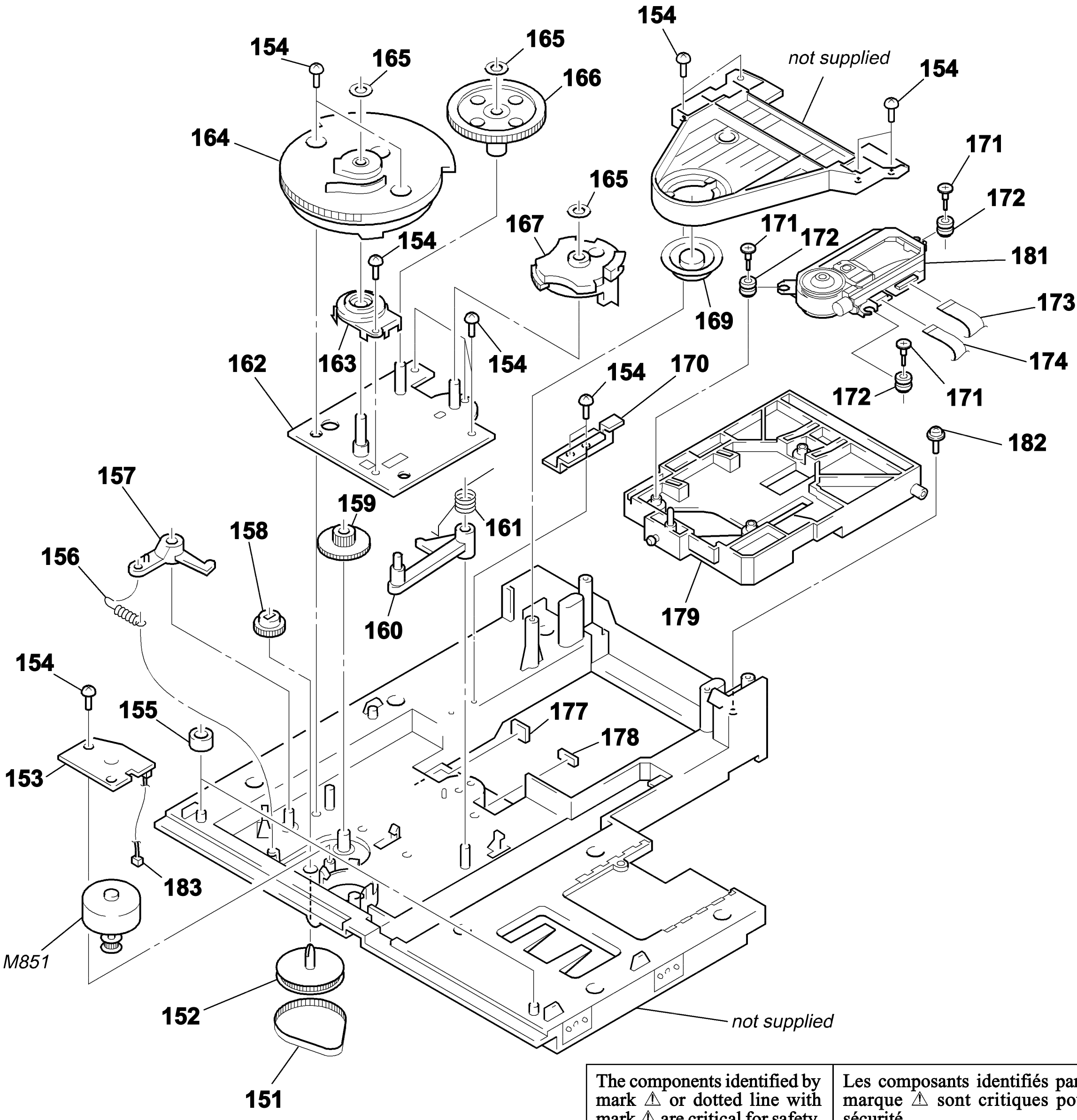
105
104
106
not supplied
112
M951
113
not supplied
not supplied
114
107
108
115
116
111
109
110
not supplied
117
103
118
103
119
121

Ref. No.	Part No.	Description	Remark
101	7-685-648-79	SCREW (M3X12), TAPPING	
102	3-062-119-03	TABLE (ROTARY)	
103	3-970-608-11	SUMITITE (B3), +BV	
104	7-621-773-93	SCREW +B 2.6X3	
105	3-051-063-01	GEAR (DRIVE)	
106	3-325-697-21	WASHER	
107	4-957-294-11	SPRING (D.T), TENSION	
108	3-069-092-01	SPRING (RACK DISENGAGEMENT)	
109	4-957-291-11	LEVER (RACK RELEASE)	
110	4-957-868-11	SCREW (+PTPWH 2.6X20)	
111	3-066-708-01	SCREW (+PTPWH 2.6X10)	
112	3-051-061-01	PULLEY (MOTOR)	
113	3-051-076-01	BELT (RM)	
* 114	4-957-278-01	BEARING (ROTARY A)	
115	X-4947-960-1	ROLLER ASSY	
116	A-6062-390-D	TABLE (LOADING) ASSY	
117	A-6062-388-D	TABLE ASSY	
118	1-757-751-11	CABLE, FLEXIBLE FLAT (FCS-005)	
* 119	A-6065-676-A	SE-122 BOARD, COMPLETE	(US, CND, AUS, PX)
* 119	A-6065-683-A	SE-122 BOARD, COMPLETE (AEP, UK)	
121	3-941-343-21	TAPE (A)	
M951	1-541-632-11	MOTOR, DC (TURN TABLE)	

8-1-4. CHASSIS ASSEMBLY


154
165
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not supplied
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164
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162
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154
170
174
172
171
182
157
159
161
158
156
160
179
154
155
177
178
153
183
M851
152
not supplied
151

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
151	4-944-490-01	BELT (TIMING)	
152	X-3951-493-1	ASSY, PULLEY	
* 153	A-6065-677-A	LM-63 BOARD, COMPLETE	(US, CND, AUS, PX)
* 153	A-6065-684-A	LM-63 BOARD, COMPLETE (AEP, UK)	
154	3-970-608-11	SUMITITE (B3), +BV	
* 155	4-951-619-01	CUSHION (A)	
156	4-962-087-01	SPRING (S), TENSION	
157	3-061-963-01	LEVER, SET	
158	4-934-375-01	GEAR (LOADING B)	
159	4-957-303-01	GEAR (LOADING C)	
160	3-061-962-01	LEVER, LOCK	
161	4-957-281-11	SPRING (LOCK LEVER)	
162	X-3950-723-1	BRACKET (GEAR) ASSY	
163	1-466-996-21	ENCODER, ROTARY (LOADING)	
164	4-957-288-01	GEAR (MAIN)	
165	4-957-283-11	WASHER (5), STOPPER	
166	4-957-287-01	GEAR (REV)	
167	4-957-286-11	GEAR (U/D)	
169	3-056-532-11	PULLEY, CHUCKING	
170	3-051-082-01	STOPPER (BU)	
171	4-981-923-01	SCREW (M), STEP	
172	3-053-847-11	INSULATOR	
173	1-757-754-11	CABLE, FLEXIBLE FLAT (FMM-036)	
174	1-757-755-11	CABLE, FLEXIBLE FLAT (FMD-025)	
* 177	4-981-731-01	CUSHION (U/D)	
* 178	4-981-731-11	CUSHION (U/D)	
179	3-066-138-01	HOLDER, BU	
⚠181	8-820-144-06	OPTICAL PICK-UP KHM-240AAA/J1RP	
182	7-685-648-79	SCREW (M3X12), TAPPING	
183	1-961-112-11	HARNESS, BOARD IN (LE-054)	
M851	A-4660-977-A	MOTOR ASSY, LOADING	

AV-57

8-2. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Not all of the parts for POWER BLOCK (MPN4801, MPN4901) are listed.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA. . : μA. . uPA. . : μPA. .
  uPB. . : μPB. . uPC. . : μPC. .
  uPD. . : μPD. .
- CAPACITORS
  uF: μF
- COILS
  uH: μH
- Abbreviation
  AUS: Australian
  CND: Canadian

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	A-6065-679-A	AV-57 BOARD, COMPLETE (US, CND, AUS, PX)			
*	A-6065-686-A	AV-57 BOARD, COMPLETE (AEP, UK)			
		**********************			
		(Ref.No.: 1,000 Series)			
		< CAPACITOR >			
C101	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C102	1-104-664-11	ELECT	47uF	20%	16V
C103	1-104-664-11	ELECT	47uF	20%	16V
C104	1-104-664-11	ELECT	47uF	20%	16V
C105	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C106	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C107	1-104-664-11	ELECT	47uF	20%	16V
C108	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C111	1-104-664-11	ELECT	47uF	20%	16V (AEP, UK)
C112	1-104-664-11	ELECT	47uF	20%	16V (AEP, UK)
C113	1-104-664-11	ELECT	47uF	20%	16V (AEP, UK)
C115	1-104-664-11	ELECT	47uF	20%	16V (AEP, UK)
C116	1-104-664-11	ELECT	47uF	20%	16V (AEP, UK)
C203	1-104-664-11	ELECT	47uF	20%	16V
C204	1-104-664-11	ELECT	47uF	20%	16V
C205	1-104-664-11	ELECT	47uF	20%	16V
C207	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C208	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C209	1-104-664-11	ELECT	47uF	20%	16V
C210	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C211	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C212	1-164-218-11	CERAMIC CHIP	180PF	0.25PF	50V
C213	1-164-218-11	CERAMIC CHIP	180PF	0.25PF	50V
C214	1-164-218-11	CERAMIC CHIP	180PF	0.25PF	50V
C215	1-164-218-11	CERAMIC CHIP	180PF	0.25PF	50V
C216	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C217	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C218	1-126-934-11	ELECT	220uF	20%	16V
C219	1-126-960-11	ELECT	1uF	20%	50V
C220	1-104-664-11	ELECT	47uF	20%	16V
C221	1-104-664-11	ELECT	47uF	20%	16V
C222	1-126-960-11	ELECT	1uF	20%	50V (AEP, UK)
C225	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C228	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C235	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C236	1-104-664-11	ELECT	47uF	20%	16V
C237	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C238	1-126-933-11	ELECT	100uF	20%	16V
C239	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C240	1-126-933-11	ELECT	100uF	20%	16V
C241	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C242	1-126-934-11	ELECT	220uF	20%	16V
C243	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C244	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C245	1-126-933-11	ELECT	100uF	20%	16V
C246	1-126-933-11	ELECT	100uF	20%	16V
		< CONNECTOR >			
CN101	1-815-149-11	CONNECTOR, FPC/FFC (1mm PIC) 21P			(AEP, UK)
CN201	1-815-390-11	CONNECTOR, FFC/FPC 25P			
CN202	1-506-472-11	PIN, CONNECTOR 7P			
* CN203	1-506-475-11	PIN, CONNECTOR 10P			
CN204	1-506-480-11	PIN, CONNECTOR 15P			
		< DIODE >			
D101	8-719-071-15	DIODE HZM6.8ZWA1TL			
D102	8-719-071-15	DIODE HZM6.8ZWA1TL			
D201	8-719-914-43	DIODE DAN202K-T-146			
D202	8-719-914-44	DIODE DAP202K-T-146			
D203	8-719-914-44	DIODE DAP202K-T-146 (AEP, UK)			
		< FERRITE BEAD >			
FB201	1-469-324-21	FERRITE	0uH		
FB202	1-469-324-21	FERRITE	0uH		
FB203	1-469-324-21	FERRITE	0uH		
FB204	1-469-324-21	FERRITE	0uH		
FB205	1-469-324-21	FERRITE	0uH		
FB206	1-469-324-21	FERRITE	0uH		
		< IC >			
IC101	8-759-667-17	IC L79M05TLL-SONY-TL			
IC102	8-759-826-45	IC LA73050-TLM (US, CND, AUS, PX)			
IC102	8-759-826-46	IC LA73051-TLM (AEP, UK)			
IC201	8-749-017-31	IC GP1FA550TZ (DIGITAL OUT-OPTICAL)			

Ref. No.	Part No.	Description			Remark
IC202	8-759-711-59	IC NJM78L05UA-TE1			
IC203	8-759-909-71	IC BA4558F-E2			
		< JACK >			
J101	1-815-359-11	JACK, PIN (3P) (LINE OUT) (AEP, UK)			
J101	1-815-363-11	JACK, PIN (6P) (LINE OUT)			(US, CND, AUS, PX)
J102	1-815-361-11	JACK, PIN 3P (COMPONENT VIDEO OUT)			(US, CND, AUS, PX)
J103	1-815-424-11	TERMINAL, S (1P) (S VIDEO OUT)			
J201	1-793-446-21	JACK, PIN 1P (DIGITAL OUT-COAXIAL)			
		< JUMPER RESISTOR >			
JR101	1-216-295-11	SHORT	0		
JR103	1-216-295-11	SHORT	0		
JR104	1-216-295-11	SHORT	0		
JR105	1-216-295-11	SHORT	0		
JR106	1-216-295-11	SHORT	0		
JR107	1-216-295-11	SHORT	0		
JR108	1-216-295-11	SHORT	0		
JR109	1-216-295-11	SHORT	0		
		< COIL >			
L101	1-412-064-11	INDUCTOR	100uH		
L201	1-414-183-41	INDUCTOR	10uH		
L202	1-414-183-41	INDUCTOR	10uH		
		< IC LINK >			
⚠PS201	1-576-509-21	RINK, IC (1.0A)			
⚠PS202	1-576-509-21	RINK, IC (1.0A)			
		< TRANSISTOR >			
Q104	8-729-421-19	TRANSISTOR	UN2213-TX		
Q105	8-729-424-08	TRANSISTOR	UN2111-TX		
Q106	8-729-216-22	TRANSISTOR	2SA1162-YG-TE85L		(AEP, UK)
Q201	8-729-230-49	TRANSISTOR	2SC2712-YG-TE85L		
Q202	8-729-421-19	TRANSISTOR	UN2213-TX		
Q203	8-729-027-53	TRANSISTOR	DTC124TKA-T146		
Q204	8-729-216-22	TRANSISTOR	2SB709A-QRS-TX		
Q205	8-729-421-19	TRANSISTOR	UN2213-TX (AEP, UK)		
Q206	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		
Q207	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		
Q208	8-729-027-53	TRANSISTOR	DTC124TKA-T146 (AEP, UK)		
Q209	8-729-216-22	TRANSISTOR	2SB709A-QRS-TX (AEP, UK)		
		< RESISTOR >			
R101	1-216-295-11	SHORT	0		
R102	1-216-295-11	SHORT	0		
R103	1-216-295-11	SHORT	0		
R107	1-216-073-00	METAL CHIP	10K	5%	1/10W
R108	1-216-049-11	RES-CHIP	1K	5%	1/10W (AEP, UK)
R113	1-216-073-00	METAL CHIP	10K	5%	1/10W
R114	1-216-021-00	METAL CHIP	68	5%	1/10W (US, CND, AUS, PX)
R115	1-216-021-00	METAL CHIP	68	5%	1/10W
R116	1-216-021-00	METAL CHIP	68	5%	1/10W

Ref. No.	Part No.	Description			Remark
R117	1-216-021-00	METAL CHIP	68	5%	1/10W
R118	1-216-021-00	METAL CHIP	68	5%	1/10W (US, CND, AUS, PX)
R119	1-216-021-00	METAL CHIP	68	5%	1/10W (US, CND, AUS, PX)
R120	1-216-021-00	METAL CHIP	68	5%	1/10W (US, CND, AUS, PX)
R121	1-216-295-11	SHORT	0 (US, CND, AUS, PX)		
R122	1-216-295-11	SHORT	0		
R123	1-216-295-11	SHORT	0		
R124	1-216-295-11	SHORT	0		
R125	1-216-295-11	SHORT	0 (US, CND, AUS, PX)		
R126	1-216-295-11	SHORT	0 (US, CND, AUS, PX)		
R127	1-216-295-11	SHORT	0 (US, CND, AUS, PX)		
R201	1-216-295-11	SHORT	0		
R202	1-216-033-00	METAL CHIP	220	5%	1/10W
R203	1-216-295-11	SHORT	0		
R204	1-216-021-00	METAL CHIP	68	5%	1/10W
R205	1-216-073-00	METAL CHIP	10K	5%	1/10W
R206	1-216-049-11	RES-CHIP	1K	5%	1/10W
R207	1-216-049-11	RES-CHIP	1K	5%	1/10W
R208	1-216-049-11	RES-CHIP	1K	5%	1/10W
R210	1-216-295-11	SHORT	0		
R212	1-216-295-11	SHORT	0		
R213	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R214	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R215	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R216	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R217	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R218	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R219	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R220	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R221	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R222	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R223	1-216-065-91	RES-CHIP	4.7K	5%	1/10W (AEP, UK)
R224	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R225	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R226	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R227	1-216-073-00	METAL CHIP	10K	5%	1/10W
R228	1-216-073-00	METAL CHIP	10K	5%	1/10W
R229	1-216-089-11	RES-CHIP	47K	5%	1/10W
R230	1-216-041-00	METAL CHIP	470	5%	1/10W
R231	1-216-041-00	METAL CHIP	470	5%	1/10W
R232	1-216-073-00	METAL CHIP	10K	5%	1/10W
R233	1-216-089-11	RES-CHIP	47K	5%	1/10W
R234	1-216-089-11	RES-CHIP	47K	5%	1/10W
R235	1-216-073-00	METAL CHIP	10K	5%	1/10W (AEP, UK)
R236	1-216-073-00	METAL CHIP	10K	5%	1/10W (AEP, UK)
R237	1-216-089-11	RES-CHIP	47K	5%	1/10W (AEP, UK)
R238	1-216-065-91	RES-CHIP	4.7K	5%	1/10W (US, CND, AUS, PX)
R239	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R240	1-216-073-00	METAL CHIP	10K	5%	1/10W (AEP, UK)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

AV-57 **CN-142** **ER-16**

Ref. No.	Part No.	Description			Remark
R241	1-216-065-91	RES-CHIP	4.7K	5%	1/10W (AEP, UK)
R242	1-216-097-11	RES-CHIP	100K	5%	1/10W
R243	1-216-097-11	RES-CHIP	100K	5%	1/10W (AEP, UK)
R244	1-216-041-00	METAL CHIP	470	5%	1/10W (US, CND, AUS, PX)
R245	1-216-041-00	METAL CHIP	470	5%	1/10W
R246	1-216-041-00	METAL CHIP	470	5%	1/10W (US, CND, AUS, PX)
R247	1-216-041-00	METAL CHIP	470	5%	1/10W
R252	1-216-295-11	SHORT	0 (US, CND, AUS, PX)		
R253	1-216-295-11	SHORT	0		
R254	1-216-295-11	SHORT	0 (US, CND, AUS, PX)		
R255	1-216-295-11	SHORT	0		
R256	1-216-295-11	SHORT	0		
R260	1-216-295-11	SHORT	0		
R261	1-216-295-11	SHORT	0		
R262	1-216-295-11	SHORT	0		

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*	A-6065-680-A	CN-142 BOARD, COMPLETE			(US, CND, AUS, PX)
*	A-6065-687-A	CN-142 BOARD, COMPLETE (AEP, UK)			

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(Ref.No.: 1,000 Series)

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C301	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C302	1-124-234-00	ELECT	22uF	20%	16V
C303	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C304	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C305	1-124-248-00	ELECT	22uF	20%	35V
C307	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C308	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C309	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C310	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
		< CONNECTOR >			
CN301	1-794-196-11	CONNECTOR, FFC/FPC 11P			
CN302	1-815-458-21	CONNECTOR, BOARD TO BOARD 15P			
CN303	1-506-487-11	PIN, CONNECTOR 8P			
CN304	1-506-485-11	PIN, CONNECTOR 6P			
CN305	1-506-486-11	PIN, CONNECTOR 7P			
CN306	1-785-694-11	CONNECTOR, FFC/FPC 7P			
		< DIODE >			
D301	8-719-069-54	DIODE UDZSTE-175.1B			
		< EARTH TERMINAL >			
* ET301	1-537-738-21	TERMINAL, EARTH			
		< FERRITE BEAD >			
FB301	1-216-295-11	SHORT	0		
FB302	1-216-295-11	SHORT	0		
FB303	1-216-295-11	SHORT	0		
FB304	1-216-295-11	SHORT	0		
FB309	1-216-295-11	SHORT	0		
FB311	1-469-324-21	FERRITE	0uH		
FB312	1-469-324-21	FERRITE	0uH		
FB313	1-469-324-21	FERRITE	0uH		
		< IC >			
IC301	8-759-832-05	IC BA18BC0FP-E2			
IC303	8-759-598-69	IC BA6956AN			
		< TRANSISTOR >			
Q301	8-729-026-49	TRANSISTOR	2SA1037AK-T146-QR		
		< RESISTOR >			
R311	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R312	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R313	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R315	1-216-295-11	SHORT	0		
R316	1-216-025-11	RES-CHIP	100	5%	1/10W
R318	1-216-295-11	SHORT	0		
R319	1-216-025-11	RES-CHIP	100	5%	1/10W
R320	1-216-061-00	METAL CHIP	3.3K	5%	1/10W

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*	A-6065-682-A	ER-16 BOARD, COMPLETE (AEP, UK)			

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(Ref.No.: 1,000 Series)

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C903	1-104-664-11	ELECT	47uF	20%	16V
C905	1-104-664-11	ELECT	47uF	20%	16V
C907	1-104-664-11	ELECT	47uF	20%	16V
C913	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V
C914	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V
C943	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C945	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C962	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C963	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C973	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
		< CONNECTOR >			
CN901	1-815-149-11	CONNECTOR, FPC/FFC (1mm PIC) 21P			
		< JACK >			
CNJ902	1-251-780-11	SOCKET, PIN (21P) (LINE 1 (RGB)-TV)			
		< DIODE >			
D901	8-719-988-61	DIODE 1SS355TE-17			
D907	8-719-914-44	DIODE DAP202K-T-146			
D917	8-719-071-15	DIODE HZM6.8ZWA1TL			
D918	8-719-071-15	DIODE HZM6.8ZWA1TL			
D919	8-719-071-15	DIODE HZM6.8ZWA1TL			
D920	8-719-071-15	DIODE HZM6.8ZWA1TL			
D929	8-719-056-82	DIODE UDZ-TE-17-6.2B			
D930	8-719-977-40	DIODE UDZ-TE-17-13B			
		< FERRITE BEAD >			
FB907	1-414-553-11	FERRITE	0uH		
FB908	1-414-553-11	FERRITE	0uH		
FB909	1-414-553-11	FERRITE	0uH		
FB910	1-414-553-11	FERRITE	0uH		
FB911	1-414-233-22	FERRITE	0uH		
FB912	1-414-233-22	FERRITE	0uH		

Ref. No.	Part No.	Description			Remark
		< IC >			
IC901	8-759-826-47	IC LA73052-TLM			
		< JUMPER RESISTOR >			
JR901	1-216-295-11	SHORT	0		
JR902	1-216-295-11	SHORT	0		
JR903	1-216-295-11	SHORT	0		
JR904	1-216-295-11	SHORT	0		
JR905	1-216-295-11	SHORT	0		
JR906	1-216-295-11	SHORT	0		
		< COIL >			
L905	1-412-064-11	INDUCTOR	100uH		
		< TRANSISTOR >			
Q901	8-729-421-19	TRANSISTOR	UN2213-TX		
Q902	8-729-422-27	TRANSISTOR	2SD601A-QRS-TX		
Q903	8-729-424-08	TRANSISTOR	UN2111-TX		
Q906	8-729-421-19	TRANSISTOR	UN2213-TX		
Q907	8-729-424-08	TRANSISTOR	UN2111-TX		
Q908	8-729-421-22	TRANSISTOR	UN2211-TX		
		< RESISTOR >			
R905	1-216-089-11	RES-CHIP	47K	5%	1/10W
R906	1-216-089-11	RES-CHIP	47K	5%	1/10W
R907	1-216-089-11	RES-CHIP	47K	5%	1/10W
R908	1-216-105-91	RES-CHIP	220K	5%	1/10W
R909	1-216-037-00	METAL CHIP	330	5%	1/10W
R910	1-216-037-00	METAL CHIP	330	5%	1/10W
R911	1-216-037-00	METAL CHIP	330	5%	1/10W
R912	1-216-037-00	METAL CHIP	330	5%	1/10W
R914	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R915	1-216-049-11	RES-CHIP	1K	5%	1/10W
R916	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R917	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R918	1-216-021-00	METAL CHIP	68	5%	1/10W
R924	1-216-041-00	METAL CHIP	470	5%	1/10W
R926	1-216-041-00	METAL CHIP	470	5%	1/10W
R927	1-216-021-00	METAL CHIP	68	5%	1/10W
R928	1-216-021-00	METAL CHIP	68	5%	1/10W
R929	1-216-021-00	METAL CHIP	68	5%	1/10W
R939	1-216-017-91	RES-CHIP	47	5%	1/10W
R940	1-216-089-11	RES-CHIP	47K	5%	1/10W
R941	1-216-089-11	RES-CHIP	47K	5%	1/10W
R942	1-216-089-11	RES-CHIP	47K	5%	1/10W
R943	1-216-089-11	RES-CHIP	47K	5%	1/10W
R950	1-216-081-00	METAL CHIP	22K	5%	1/10W

Ref. No.	Part No.	Description	Remark
*	A-6065-673-A	FL-119 BOARD, COMPLETE	(US, CND, AUS, PX)
*	A-6065-689-A	FL-119 BOARD, COMPLETE (AEP, UK)	

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(Ref.No.: 3,000 Series)

Ref. No.	Part No.	Description			Remark
		< CONNECTOR >			
CN601	1-815-569-11	CONNECTOR, FFC/FPC 7P			
* CN602	1-564-013-11	PIN, CONNECTOR 3P			
CN603	1-815-467-11	CONNECTOR, FFC/FPC 5P			
		< RESISTOR >			
R601	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R602	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R603	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R604	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
		< SWITCH >			
S601	1-771-349-21	SWITCH, KEYBOARD (EXCHANGE)			
S602	1-771-349-21	SWITCH, KEYBOARD (DISC SKIP)			
S603	1-771-349-21	SWITCH, KEYBOARD (DISPLAY)			
S604	1-771-349-21	SWITCH, KEYBOARD (OPEN/CLOSE ⏏)			
S605	1-771-349-21	SWITCH, KEYBOARD (NEXT ⏭)			
S606	1-771-349-21	SWITCH, KEYBOARD (PREV ⏮)			

Ref. No.	Part No.	Description	Remark
*	A-6065-674-A	FR-178 BOARD, COMPLETE	(US, CND, AUS, PX)
*	A-6065-690-A	FR-178 BOARD, COMPLETE (AEP, UK)	

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(Ref.No.: 3,000 Series)

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C701	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C702	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C703	1-124-465-00	ELECT	0.47uF	20%	50V
		< CONNECTOR >			
CN701	1-793-097-11	CONNECTOR, FFC/FPC 11P			
		< DIODE >			
D701	8-719-056-06	DIODE SLR-342DCT31 (SURROUND)			
D702	8-719-056-06	DIODE SLR-342DCT31 (DISC SELECT-1)			
D703	8-719-056-06	DIODE SLR-342DCT31 (DISC SELECT-2)			
D704	8-719-056-06	DIODE SLR-342DCT31 (DISC SELECT-3)			
D705	8-719-056-06	DIODE SLR-342DCT31 (DISC SELECT-4)			
D706	8-719-056-06	DIODE SLR-342DCT31 (DISC SELECT-5)			
D707	8-719-056-07	DIODE SLR-342MCT31 (POWER ON)			
D708	8-719-059-98	DIODE SLR-342VCT31 (STANDBY)			
D709	8-719-056-06	DIODE SLR-342DCT31 (BNR)			
		< IC >			
IC701	8-752-842-96	IC NJU3711M (TE2)			
IC702	8-749-011-05	IC GP1U28X			
		< TRANSISTOR >			
Q701	1-801-806-11	TRANSISTOR	DTC144EKA-T146		
Q702	1-801-806-11	TRANSISTOR	DTC144EKA-T146		
		< RESISTOR >			
R701	1-216-047-91	RES-CHIP	820	5%	1/10W
R702	1-216-047-91	RES-CHIP	820	5%	1/10W
R703	1-216-047-91	RES-CHIP	820	5%	1/10W
R704	1-216-073-00	METAL CHIP	10K	5%	1/10W
R705	1-216-081-00	METAL CHIP	22K	5%	1/10W
R706	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R707	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R708	1-216-047-91	RES-CHIP	820	5%	1/10W
R710	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R711	1-216-047-91	RES-CHIP	820	5%	1/10W
R712	1-216-059-00	METAL CHIP	2.7K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R714	1-216-047-91	RES-CHIP	820	5%	1/10W
R716	1-216-047-91	RES-CHIP	820	5%	1/10W
R717	1-216-081-00	METAL CHIP	22K	5%	1/10W
R718	1-216-037-00	METAL CHIP	330	5%	1/10W
R719	1-216-033-00	METAL CHIP	220	5%	1/10W
R722	1-216-017-91	RES-CHIP	47	5%	1/10W
		< SWITCH >			
S701	1-771-349-21	SWITCH, KEYBOARD (DISC SELECT-1)			
S702	1-771-349-21	SWITCH, KEYBOARD (DISC SELECT-2)			
S703	1-771-349-21	SWITCH, KEYBOARD (DISC SELECT-3)			
S704	1-771-349-21	SWITCH, KEYBOARD (DISC SELECT-4)			
S705	1-771-349-21	SWITCH, KEYBOARD (DISC SELECT-5)			
S706	1-771-349-21	SWITCH, KEYBOARD (SURROUND)			
S707	1-771-349-21	SWITCH, KEYBOARD (BNR)			
*	A-6065-681-A	IF-81 BOARD, COMPLETE (US, CND, AUS, PX)			
*	A-6065-688-A	IF-81 BOARD, COMPLETE (AEP, UK)			
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					(Ref.No.: 1,000 Series)
	3-066-136-01	HOLDER, FL (U)			
	3-066-137-01	HOLDER, FL (L)			
		< BUZZER >			
BZ401	1-529-986-11	BUZZER, VOLTAGE			
		< CAPACITOR >			
C402	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C417	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C419	1-126-934-11	ELECT	220uF	20%	16V
C420	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C421	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C422	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C425	1-128-131-11	ELECT	22uF	20%	50V
C427	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C428	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C430	1-164-392-11	CERAMIC CHIP	390PF	5%	50V
C431	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C432	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C436	1-164-392-11	CERAMIC CHIP	390PF	5%	50V
C437	1-126-157-11	ELECT	10uF	20%	16V
		< CONNECTOR >			
CN401	1-506-489-11	PIN, CONNECTOR 10P			
CN402	1-815-569-11	CONNECTOR, FFC/FPC 7P			
CN403	1-793-097-11	CONNECTOR, FFC/FPC 11P			
CN404	1-506-487-11	PIN, CONNECTOR 8P			
CN405	1-815-468-11	PIN, CONNECTOR (PC BOARD)			
		< DIODE >			
D403	8-719-041-97	DIODE MA113- (TX)			
D404	8-719-041-97	DIODE MA113- (TX)			
D405	8-719-041-97	DIODE MA113- (TX)			
D406	8-719-041-97	DIODE MA113- (TX)			
D412	8-719-422-62	DIODE MA8062-L-TX			
		< IC >			
IC402	8-759-525-43	IC TC74HCT08AF (EL)			
IC404	6-800-032-01	IC HD64F3664H-V01			
IC405	8-759-684-35	IC S-80830ANUP-EDT-T2			
		< JUMPER RESISTOR >			
JR401	1-216-295-11	SHORT	0		
JR403	1-216-295-11	SHORT	0		
JR404	1-216-295-11	SHORT	0		
JR405	1-216-295-11	SHORT	0		
JR406	1-216-295-11	SHORT	0		
JR407	1-216-295-11	SHORT	0		
JR408	1-216-295-11	SHORT	0		
JS402	1-216-295-11	SHORT	0		
		< COIL >			
L401	1-408-978-21	INDUCTOR	47uH		
		< FLUORESCENT INDICATOR >			
ND401	1-518-750-11	VACUUM FLUORESCENT DISPLAYS			
		< TRANSISTOR >			
Q401	8-729-056-46	TRANSISTOR	2SC5053T100Q		
Q402	8-729-056-46	TRANSISTOR	2SC5053T100Q		
Q406	8-729-903-46	TRANSISTOR	2SB1132-T100-QR		
Q407	8-729-027-23	TRANSISTOR	DTA114EKA-T146		
Q408	8-729-900-53	TRANSISTOR	DTC114EKA-T146		
		< RESISTOR >			
R401	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R402	1-216-025-11	RES-CHIP	100	5%	1/10W
R403	1-216-025-11	RES-CHIP	100	5%	1/10W
R404	1-216-025-11	RES-CHIP	100	5%	1/10W
R407	1-216-013-00	METAL CHIP	33	5%	1/10W
R408	1-216-027-00	METAL CHIP	120	5%	1/10W
R410	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R411	1-216-295-11	SHORT	0		
R412	1-216-073-00	METAL CHIP	10K	5%	1/10W
R413	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R414	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R416	1-216-097-11	RES-CHIP	100K	5%	1/10W
R417	1-216-049-11	RES-CHIP	1K	5%	1/10W
R418	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R419	1-216-049-11	RES-CHIP	1K	5%	1/10W
R420	1-216-025-11	RES-CHIP	100	5%	1/10W
R421	1-216-097-11	RES-CHIP	100K	5%	1/10W
R422	1-216-073-00	METAL CHIP	10K	5%	1/10W
R423	1-216-073-00	METAL CHIP	10K	5%	1/10W
R424	1-216-073-00	METAL CHIP	10K	5%	1/10W
R425	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R426	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R427	1-216-073-00	METAL CHIP	10K	5%	1/10W
R429	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R430	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R431	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R432	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R433	1-216-089-11	RES-CHIP	47K	5%	1/10W
R444	1-216-025-11	RES-CHIP	100	5%	1/10W
R446	1-216-097-11	RES-CHIP	100K	5%	1/10W
R447	1-216-073-00	METAL CHIP	10K	5%	1/10W
R448	1-216-097-11	RES-CHIP	100K	5%	1/10W
R449	1-216-073-00	METAL CHIP	10K	5%	1/10W
R450	1-216-097-11	RES-CHIP	100K	5%	1/10W
R490	1-216-081-00	METAL CHIP	22K	5%	1/10W

< SWITCH >

Ref. No.	Part No.	Description	Remark
S401	1-771-349-21	SWITCH, KEYBOARD (■)	
S402	1-771-349-21	SWITCH, KEYBOARD (❚❚)	
S403	1-771-349-21	SWITCH, KEYBOARD (▷)	

< TRANSFORMER >

Ref. No.	Part No.	Description	Remark
T401	1-437-376-11	TRANSFORMER, DC-DC CONVERTER	

< VIBRATOR >

Ref. No.	Part No.	Description	Remark
X401	1-781-472-21	VIBRATOR, CERAMIC (8MHz)	

Ref. No.	Part No.	Description	Remark
*	A-6065-677-A	LM-63 BOARD, COMPLETE	(US, CND, AUS, PX)
*	A-6065-684-A	LM-63 BOARD, COMPLETE (AEP, UK)	

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(Ref.No.: 1,000 Series)

< HARNESS >

Ref. No.	Part No.	Description	Remark
B851	1-961-112-11	HARNESS, BOARD IN (LE-054)	

< MOTOR >

Ref. No.	Part No.	Description	Remark
M851	1-541-632-11	MOTOR, DC	

Ref. No.	Part No.	Description	Remark
*	A-6065-678-A	MB-98 BOARD, COMPLETE (US, CND, PX)	
*	A-6065-685-A	MB-98 BOARD, COMPLETE (AEP, UK)	
*	A-6065-692-A	MB-98 BOARD, COMPLETE (AUS)	

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(Ref.No.: 2,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C103	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C104	1-126-209-11	ELECT CHIP	100uF	20%	4V
C105	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C106	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C107	1-162-914-11	CERAMIC CHIP	9PF	0.5PF	50V (US, CND, AUS, PX)
C107	1-162-917-11	CERAMIC CHIP	15PF	5%	50V (AEP, UK)
C108	1-162-914-11	CERAMIC CHIP	9PF	0.5PF	50V (US, CND, AUS, PX)
C108	1-162-917-11	CERAMIC CHIP	15PF	5%	50V (AEP, UK)
C109	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C110	1-126-209-11	ELECT CHIP	100uF	20%	4V
C111	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C112	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C113	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C114	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C115	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C116	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C118	1-126-607-11	ELECT CHIP	47uF	20%	4V
C121	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C122	1-126-204-11	ELECT CHIP	47uF	20%	16V
C123	1-126-246-11	ELECT CHIP	220uF	20%	4V
C124	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C201	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C202	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C205	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C206	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C207	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C208	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C209	1-124-779-00	ELECT CHIP	10uF	20%	16V
C215	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C216	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C217	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C218	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C219	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C221	1-124-779-00	ELECT CHIP	10uF	20%	16V
C222	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C223	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C224	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C225	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C226	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C227	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C228	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C231	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C232	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C233	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C234	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C235	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C236	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C238	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C239	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C240	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C243	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C244	1-124-779-00	ELECT CHIP	10uF	20%	16V
C246	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C247	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C248	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C304	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C305	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C306	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C307	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C309	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C310	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C311	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C312	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C313	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C315	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C317	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C318	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C319	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C320	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C321	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C322	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C323	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C324	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C325	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C326	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C327	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C328	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C331	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C332	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C333	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C334	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C335	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C336	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C337	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C338	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

MB-98

Ref. No.	Part No.	Description			Remark
C339	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C340	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C341	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C342	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C343	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C344	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C346	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C347	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C348	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C349	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C350	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C351	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C352	1-126-204-11	ELECT CHIP	47uF	20%	16V
C401	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C402	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C403	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C404	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C405	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C406	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C407	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C408	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C409	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C410	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C411	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C412	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C413	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C414	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C415	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C416	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C417	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C418	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C419	1-126-204-11	ELECT CHIP	47uF	20%	16V
C420	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C421	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C427	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C428	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C501	1-126-193-11	ELECT	1uF	20%	50V
C502	1-124-779-00	ELECT CHIP	10uF	20%	16V
C503	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C504	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C505	1-124-779-00	ELECT CHIP	10uF	20%	16V
C506	1-124-779-00	ELECT CHIP	10uF	20%	16V
C508	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C509	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C510	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C512	1-126-246-11	ELECT CHIP	220uF	20%	4V
C513	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C514	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C516	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C518	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C519	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C520	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C521	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C522	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C523	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C524	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C525	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C526	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C528	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C529	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

Ref. No.	Part No.	Description			Remark
C530	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C531	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C532	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (AEP, UK, AUS)
C533	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (AEP, UK, AUS)
C534	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C535	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (AEP, UK, AUS)
C536	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C537	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (AEP, UK, AUS)
C538	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C539	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C540	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C541	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C542	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C544	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C545	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C546	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C547	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C601	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C602	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C603	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C604	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C802	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C807	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C810	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C811	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C812	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C813	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V
C816	1-124-779-00	ELECT CHIP	10uF	20%	16V
		< CONNECTOR >			
CN101	1-815-459-21	CONNECTOR, BOARD TO BOARD 15P			
* CN103	1-770-470-21	PIN, CONNECTOR (PC BOARD) 6P			
CN201	1-815-507-11	CONNECTOR, FFC/FPC 26P			
CN202	1-779-935-11	CONNECTOR, FFC/FPC 9P			
CN402	1-774-766-11	CONNECTOR, FFC/FPC 11P			
CN801	1-815-396-21	CONNECTOR, FFC/FPC 25P			
		< FERRITE BEAD >			
FB102	1-469-324-21	FERRITE	0uH		
FB103	1-469-324-21	FERRITE	0uH		
FB104	1-469-324-21	FERRITE	0uH		
FB105	1-469-324-21	FERRITE	0uH		
FB106	1-469-324-21	FERRITE	0uH		
FB107	1-469-324-21	FERRITE	0uH		
FB108	1-469-324-21	FERRITE	0uH		
FB109	1-469-784-11	FERRITE	0uH		
FB110	1-469-324-21	FERRITE	0uH		
FB112	1-469-784-11	FERRITE	0uH		
		< FILTER >			
FL101	1-234-177-21	FILTER, CHIP EMI			
FL102	1-234-177-21	FILTER, CHIP EMI			
FL103	1-234-177-21	FILTER, CHIP EMI			
FL104	1-233-893-21	FILTER, CHIP EMI			
FL105	1-234-177-21	FILTER, CHIP EMI			
FL106	1-234-177-21	FILTER, CHIP EMI			

Ref. No.	Part No.	Description			Remark
FL108	1-234-177-21	FILTER, CHIP EMI			
FL201	1-234-177-21	FILTER, CHIP EMI			
FL501	1-234-177-21	FILTER, CHIP EMI			
FL502	1-234-177-21	FILTER, CHIP EMI			
FL505	1-234-177-21	FILTER, CHIP EMI			
		< IC >			
IC101	8-759-640-41	IC BR24C08F-E2			
IC102	8-759-831-81	IC IMIC6001BTD (AEP, UK)			
IC102	8-759-831-82	IC SM8707AV-E2 (US, CND, AUS, PX)			
IC103	8-759-829-75	IC MB91307APFV-G-BND-E1			
IC107	Note				
IC108	Note				
IC202	8-759-828-02	IC SP3728AC			
IC301	8-759-832-31	IC TK71533ASCL			
IC302	8-759-828-01	IC CXD9635R			
IC303	8-759-643-10	IC GM71V18160CT-6TR			
IC401	8-759-826-42	IC FAN8034			
IC501	8-759-832-30	IC TK71518ASCL			
IC502	8-759-599-45	IC MM1385ENLE			
IC503	8-752-409-87	IC CXD1933Q			
IC504	8-759-683-76	IC K4S161622D-TC80T			
IC505	8-759-683-76	IC K4S161622D-TC80T (AEP, UK, AUS)			
IC601	8-759-826-43	IC CXD9631Q			
IC801	8-759-825-34	IC CXD9626Q			
IC802	8-759-825-32	IC CXD9627N-E2			
		< COIL >			
L201	1-412-031-11	INDUCTOR CHIP 47uH			
L202	1-412-031-11	INDUCTOR CHIP 47uH			
		< TRANSISTOR >			
Q201	8-729-903-46	TRANSISTOR	2SB1132-T100-QR		
Q202	8-729-903-46	TRANSISTOR	2SB1132-T100-QR		
		< RESISTOR >			
R101	1-216-789-11	METAL CHIP	2.2	5%	1/16W
R107	1-216-821-11	METAL CHIP	1K	5%	1/16W (AEP, UK)
R107	1-216-864-91	SHORT	0 (US, CND, AUS, PX)		
R109	1-216-797-11	METAL CHIP	10	5%	1/16W
R111	1-216-817-11	METAL CHIP	470	5%	1/16W
R112	1-216-821-11	METAL CHIP	1K	5%	1/16W
R113	1-216-833-11	METAL CHIP	10K	5%	1/16W
R114	1-216-845-11	METAL CHIP	100K	5%	1/16W
R116	1-216-833-11	METAL CHIP	10K	5%	1/16W
R117	1-216-821-11	METAL CHIP	1K	5%	1/16W
R118	1-216-821-11	METAL CHIP	1K	5%	1/16W
R119	1-216-833-11	METAL CHIP	10K	5%	1/16W
R120	1-216-833-11	METAL CHIP	10K	5%	1/16W
R121	1-216-833-11	METAL CHIP	10K	5%	1/16W
R123	1-216-833-11	METAL CHIP	10K	5%	1/16W
R124	1-216-797-11	METAL CHIP	10	5%	1/16W
R125	1-216-797-11	METAL CHIP	10	5%	1/16W
R126	1-216-797-11	METAL CHIP	10	5%	1/16W
R127	1-216-797-11	METAL CHIP	10	5%	1/16W
R128	1-216-827-11	METAL CHIP	3.3K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R129	1-216-833-11	METAL CHIP	10K	5%	1/16W
R130	1-216-833-11	METAL CHIP	10K	5%	1/16W
R133	1-216-833-11	METAL CHIP	10K	5%	1/16W
R134	1-216-833-11	METAL CHIP	10K	5%	1/16W
R136	1-216-797-11	METAL CHIP	10	5%	1/16W
R137	1-216-797-11	METAL CHIP	10	5%	1/16W
R138	1-216-797-11	METAL CHIP	10	5%	1/16W
R141	1-216-797-11	METAL CHIP	10	5%	1/16W
R142	1-216-797-11	METAL CHIP	10	5%	1/16W
R143	1-216-833-11	METAL CHIP	10K	5%	1/16W
R145	1-216-833-11	METAL CHIP	10K	5%	1/16W
R146	1-216-833-11	METAL CHIP	10K	5%	1/16W
R149	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R150	1-216-041-00	METAL CHIP	470	5%	1/10W (AUS)
R150	1-216-075-00	METAL CHIP	12K	5%	1/10W (AEP, UK)
R151	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R152	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R153	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R154	1-216-075-00	METAL CHIP	12K	5%	1/10W (AUS)
R154	1-216-089-11	RES-CHIP	47K	5%	1/10W (AEP, UK)
R155	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R156	1-216-833-11	METAL CHIP	10K	5%	1/16W
R157	1-216-797-11	METAL CHIP	10	5%	1/16W
R160	1-216-833-11	METAL CHIP	10K	5%	1/16W
R161	1-216-864-91	SHORT	0		
R162	1-216-833-11	METAL CHIP	10K	5%	1/16W
R163	1-216-833-11	METAL CHIP	10K	5%	1/16W
R164	1-216-809-11	METAL CHIP	100	5%	1/16W
R165	1-216-809-11	METAL CHIP	100	5%	1/16W
R166	1-216-817-11	METAL CHIP	470	5%	1/16W
R167	1-216-864-91	SHORT	0		
R168	1-216-864-91	SHORT	0		
R170	1-216-821-11	METAL CHIP	1K	5%	1/16W
R174	1-216-797-11	METAL CHIP	10	5%	1/16W
R175	1-216-797-11	METAL CHIP	10	5%	1/16W
R176	1-216-797-11	METAL CHIP	10	5%	1/16W
R177	1-216-797-11	METAL CHIP	10	5%	1/16W
R178	1-216-797-11	METAL CHIP	10	5%	1/16W
R179	1-216-797-11	METAL CHIP	10	5%	1/16W
R181	1-216-797-11	METAL CHIP	10	5%	1/16W
R182	1-216-845-11	METAL CHIP	100K	5%	1/16W
R199	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R201	1-216-815-11	METAL CHIP	330	5%	1/16W
R202	1-216-809-11	METAL CHIP	100	5%	1/16W
R203	1-216-809-11	METAL CHIP	100	5%	1/16W
R204	1-216-837-11	METAL CHIP	22K	5%	1/16W
R205	1-216-845-11	METAL CHIP	100K	5%	1/16W
R206	1-216-838-11	METAL CHIP	27K	5%	1/16W
R207	1-216-803-11	METAL CHIP	33	5%	1/16W
R208	1-216-803-11	METAL CHIP	33	5%	1/16W
R209	1-216-821-11	METAL CHIP	1K	5%	1/16W
R210	1-216-841-11	METAL CHIP	47K	5%	1/16W
R211	1-216-809-11	METAL CHIP	100	5%	1/16W
R212	1-216-864-91	SHORT	0		
R215	1-216-864-91	SHORT	0		

Note: Part number has not been determined yet.
It will be noticed later.

MB-98

Ref. No.	Part No.	Description			Remark
R216	1-216-864-91	SHORT	0		
R219	1-216-864-91	SHORT	0		
R220	1-216-803-11	METAL CHIP	33	5%	1/16W
R223	1-216-803-11	METAL CHIP	33	5%	1/16W
R224	1-216-801-11	METAL CHIP	22	5%	1/16W
R225	1-216-841-11	METAL CHIP	47K	5%	1/16W
R229	1-216-809-11	METAL CHIP	100	5%	1/16W
R237	1-216-834-11	METAL CHIP	12K	5%	1/16W
R238	1-216-861-11	METAL CHIP	2.2M	5%	1/16W
R245	1-216-809-11	METAL CHIP	100	5%	1/16W
R246	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R299	1-216-847-11	METAL CHIP	150K	5%	1/16W
R301	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R302	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R305	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R306	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R307	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R308	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R309	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R310	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R311	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R312	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R313	1-216-817-11	METAL CHIP	470	5%	1/16W
R314	1-216-817-11	METAL CHIP	470	5%	1/16W
R315	1-216-817-11	METAL CHIP	470	5%	1/16W
R316	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R317	1-216-833-11	METAL CHIP	10K	5%	1/16W
R318	1-216-295-11	SHORT	0		
R319	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R320	1-216-295-11	SHORT	0		
R321	1-216-817-11	METAL CHIP	470	5%	1/16W
R328	1-216-833-11	METAL CHIP	10K	5%	1/16W
R329	1-216-295-11	SHORT	0		
R330	1-216-295-11	SHORT	0		
R334	1-218-871-11	METAL CHIP	10K	0.5%	1/16W
R335	1-218-855-11	METAL CHIP	2.2K	0.5%	1/16W
R336	1-216-833-11	METAL CHIP	10K	5%	1/16W
R337	1-216-809-11	METAL CHIP	100	5%	1/16W
R338	1-218-879-11	METAL CHIP	22K	0.5%	1/16W
R341	1-218-871-11	METAL CHIP	10K	0.5%	1/16W
R342	1-218-883-11	METAL CHIP	33K	0.5%	1/16W
R343	1-218-831-11	METAL CHIP	220	0.5%	1/16W
R344	1-218-847-11	METAL CHIP	1K	0.5%	1/16W
R345	1-216-833-11	METAL CHIP	10K	5%	1/16W
R349	1-216-838-11	METAL CHIP	27K	5%	1/16W
R350	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R351	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R352	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R356	1-218-853-11	METAL CHIP	1.8K	0.5%	1/16W
R368	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R384	1-216-797-11	METAL CHIP	10	5%	1/16W
R385	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R402	1-216-833-11	METAL CHIP	10K	5%	1/16W
R403	1-216-833-11	METAL CHIP	10K	5%	1/16W
R404	1-216-821-11	METAL CHIP	1K	5%	1/16W
R405	1-216-821-11	METAL CHIP	1K	5%	1/16W
R406	1-216-846-11	METAL CHIP	120K	5%	1/16W
R407	1-216-846-11	METAL CHIP	120K	5%	1/16W
R408	1-216-847-11	METAL CHIP	150K	5%	1/16W
R409	1-216-847-11	METAL CHIP	150K	5%	1/16W
R410	1-216-842-11	METAL CHIP	56K	5%	1/16W
R411	1-216-842-11	METAL CHIP	56K	5%	1/16W
R412	1-216-850-11	METAL CHIP	270K	5%	1/16W
R413	1-216-833-11	METAL CHIP	10K	5%	1/16W
R414	1-216-853-11	METAL CHIP	470K	5%	1/16W
R415	1-216-846-11	METAL CHIP	120K	5%	1/16W
R416	1-216-855-11	METAL CHIP	680K	5%	1/16W
R417	1-216-833-11	METAL CHIP	10K	5%	1/16W
R418	1-216-839-11	METAL CHIP	33K	5%	1/16W
R419	1-216-839-11	METAL CHIP	33K	5%	1/16W
R420	1-216-853-11	METAL CHIP	470K	5%	1/16W
R421	1-216-839-11	METAL CHIP	33K	5%	1/16W
R422	1-216-839-11	METAL CHIP	33K	5%	1/16W
R423	1-216-839-11	METAL CHIP	33K	5%	1/16W
R424	1-216-839-11	METAL CHIP	33K	5%	1/16W
R425	1-216-849-11	METAL CHIP	220K	5%	1/16W
R426	1-216-853-11	METAL CHIP	470K	5%	1/16W
R427	1-218-895-11	METAL CHIP	100K	0.5%	1/16W
R428	1-216-839-11	METAL CHIP	33K	5%	1/16W
R429	1-218-889-11	METAL CHIP	56K	0.5%	1/16W
R430	1-218-895-11	METAL CHIP	100K	0.5%	1/16W
R431	1-218-889-11	METAL CHIP	56K	0.5%	1/16W
R432	1-216-833-11	METAL CHIP	10K	5%	1/16W
R433	1-216-833-11	METAL CHIP	10K	5%	1/16W
R434	1-216-815-11	METAL CHIP	330	5%	1/16W
R435	1-216-833-11	METAL CHIP	10K	5%	1/16W
R436	1-216-809-11	METAL CHIP	100	5%	1/16W
R438	1-216-833-11	METAL CHIP	10K	5%	1/16W
R439	1-216-864-91	SHORT	0		
R454	1-216-821-11	METAL CHIP	1K	5%	1/16W
R455	1-216-864-91	SHORT	0		
R456	1-216-813-11	METAL CHIP	220	5%	1/16W
R457	1-216-813-11	METAL CHIP	220	5%	1/16W
R458	1-216-821-11	METAL CHIP	1K	5%	1/16W
R461	1-216-837-11	METAL CHIP	22K	5%	1/16W
R462	1-216-821-11	METAL CHIP	1K	5%	1/16W
R507	1-216-809-11	METAL CHIP	100	5%	1/16W
R510	1-216-833-11	METAL CHIP	10K	5%	1/16W
R511	1-218-831-11	METAL CHIP	220	0.5%	1/16W
R512	1-218-831-11	METAL CHIP	220	0.5%	1/16W
R513	1-218-831-11	METAL CHIP	220	0.5%	1/16W
R514	1-218-831-11	METAL CHIP	220	0.5%	1/16W
R515	1-218-831-11	METAL CHIP	220	0.5%	1/16W
R516	1-218-831-11	METAL CHIP	220	0.5%	1/16W
R517	1-216-833-11	METAL CHIP	10K	5%	1/16W
R518	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R519	1-216-295-11	SHORT	0		
R521	1-216-295-11	SHORT	0		
R522	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R524	1-216-833-11	METAL CHIP	10K	5%	1/16W
R525	1-216-833-11	METAL CHIP	10K	5%	1/16W
R533	1-216-797-11	METAL CHIP	10	5%	1/16W
R554	1-216-797-11	METAL CHIP	10	5%	1/16W
R604	1-216-809-11	METAL CHIP	100	5%	1/16W
R701	1-216-864-91	SHORT	0		
R801	1-216-864-91	SHORT	0		
R803	1-216-864-91	SHORT	0		
R804	1-216-864-91	SHORT	0		
R805	1-216-809-11	METAL CHIP	100	5%	1/16W
R807	1-216-864-91	SHORT	0		

Ref. No.	Part No.	Description		Remark
R808	1-216-864-91	SHORT	0	
		< VARIABLE RESISTOR >		
RV501	1-223-583-11	RES, ADJ, CARBON 1K		
		< VIBRATOR >		
X101	1-795-174-11	VIBRATOR, CERAMIC (16.5MHz)		
X102	1-781-867-21	VIBRATOR, CRYSTAL (27MHz)		

Ref. No.	Part No.	Description		Remark
	1-468-591-11	POWER BLOCK (MPN4801) **********************		
				(Ref.No.: 4,000 Series)
		< CAPACITOR >		
C5	9-885-006-64	ELECT	220uF	200V
C101	9-885-006-67	ELECT	330uF	35V
C111	9-885-006-66	ELECT	33uF	35V
C301	9-885-006-65	ELECT	680uF	25V
C306	9-885-006-66	ELECT	33uF	35V
C307	9-885-006-66	ELECT	33uF	35V
C401	9-885-006-67	ELECT	330uF	35V
		< DIODE >		
D4	8-719-901-33	DIODE	1SS133	
D5	8-719-063-16	DIODE	HZS9B2	
D6	8-719-901-33	DIODE	1SS133	
D7	8-719-901-33	DIODE	1SS133	
D11	8-719-054-32	DIODE	ERA15-06	
D12	8-719-054-32	DIODE	ERA15-06	
D13	8-719-054-32	DIODE	ERA15-06	
D14	8-719-054-32	DIODE	ERA15-06	
D21	8-719-901-33	DIODE	1SS133	
D22	8-719-901-33	DIODE	1SS133	
D101	8-719-210-51	DIODE	21DQ10	
D102	8-719-063-04	DIODE	MTZJ6.8A	
D103	9-885-006-59	DIODE	HZ-18CP	
D104	8-719-901-33	DIODE	1SS133	
D110	8-719-901-33	DIODE	1SS133	
D205	8-719-901-33	DIODE	1SS133	
D301	9-885-006-58	DIODE	ERB83-006	
D302	9-885-006-58	DIODE	ERB83-006	
D401	8-719-210-51	DIODE	21DQ10	
D402	8-719-063-04	DIODE	MTZJ6.8A	
D404	8-719-901-33	DIODE	1SS133	
D410	8-719-901-33	DIODE	1SS133	
		< FUSE >		
⚠F1	1-576-418-11	FUSE (2.5A/AC125V)		
		< IC >		
IC302	8-759-234-89	IC	TA76431S	
IC303	8-759-651-05	IC	TA76431AS	
		< IC LINK >		
⚠P301	1-533-593-11	LINK, IC (2A/AC60V)		

Ref. No.	Part No.	Description			Remark
⚠P302	1-533-592-11	LINK, IC (1.6A/AC60V)			
		< PHOTO COUPLER >			
⚠PC1	9-885-006-57	PHOTO COUPLER PC817			
		< TRANSISTOR >			
Q1	9-885-006-63	TRANSISTOR	2SK2638		
Q2	9-885-006-61	TRANSISTOR	2SC1741AS		
Q101	9-885-006-60	TRANSISTOR	2SB1642		
Q102	8-729-920-70	TRANSISTOR	2SC1740S		
Q103	8-729-920-70	TRANSISTOR	2SC1740S		
Q104	8-729-920-68	TRANSISTOR	2SA933S		
Q201	9-885-006-62	TRANSISTOR	2SJ525		
Q301	9-885-006-60	TRANSISTOR	2SB1642		
Q302	8-729-920-70	TRANSISTOR	2SC1740S		
Q303	8-729-920-70	TRANSISTOR	2SC1740S		
Q304	8-729-920-68	TRANSISTOR	2SA933S		
Q401	8-729-018-60	TRANSISTOR	2SD2012		
Q402	8-729-920-68	TRANSISTOR	2SA933S		
Q403	8-729-920-68	TRANSISTOR	2SA933S		
Q404	8-729-920-70	TRANSISTOR	2SC1740S		
		< RESISTOR >			
R2	1-247-887-91	CARBON	220K	5%	1/4W
R3	1-247-887-91	CARBON	220K	5%	1/4W
R5	1-247-862-91	CARBON	20K	5%	1/4W
R6	1-247-827-91	CARBON	680	5%	1/4W
R7	1-247-815-91	CARBON	220	5%	1/4W
R8	1-247-867-91	CARBON	33K	5%	1/4W
R9	1-247-851-91	CARBON	6.8K	5%	1/4W
R10	1-247-850-91	CARBON	6.2K	5%	1/4W
R11	1-247-853-91	CARBON	8.2K	5%	1/4W
R12	1-247-861-91	CARBON	18K	5%	1/4W
R13	1-247-842-91	CARBON	3K	5%	1/4W
R17	1-247-827-91	CARBON	680	5%	1/4W
R19	1-247-783-91	CARBON	10	5%	1/4W
R22	1-247-823-91	CARBON	470	5%	1/4W
R101	1-247-841-91	CARBON	2.7K	5%	1/4W
R102	1-247-831-91	CARBON	1K	5%	1/4W
R103	1-247-801-91	CARBON	56	5%	1/4W
R104	1-247-838-91	CARBON	2K	5%	1/4W
R105	1-247-847-91	CARBON	4.7K	5%	1/4W
R106	1-247-838-91	CARBON	2K	5%	1/4W
R107	1-247-847-91	CARBON	4.7K	5%	1/4W
R108	1-247-833-91	CARBON	1.2K	5%	1/4W
R111	1-247-831-91	CARBON	1K	5%	1/4W
R112	1-247-847-91	CARBON	4.7K	5%	1/4W
R113	1-247-847-91	CARBON	4.7K	5%	1/4W
R203	1-247-851-91	CARBON	6.8K	5%	1/4W
R301	1-247-811-91	CARBON	150	5%	1/4W
R302	1-247-859-91	CARBON	15K	5%	1/4W
R303	1-247-839-91	CARBON	2.2K	5%	1/4W
R304	1-247-841-91	CARBON	2.7K	5%	1/4W
R305	1-247-831-91	CARBON	1K	5%	1/4W
R306	1-247-811-91	CARBON	150	5%	1/4W
R309	1-247-835-91	CARBON	1.5K	5%	1/4W
R310	1-247-823-91	CARBON	470	5%	1/4W
R311	1-247-830-91	CARBON	910	5%	1/4W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

POWER BLOCK (MPN4801)

Ref. No.	Part No.	Description			Remark
R312	1-247-840-91	CARBON	2.4K	5%	1/4W
R313	1-247-803-91	CARBON	68	5%	1/4W
R314	1-247-809-91	CARBON	120	5%	1/4W
R315	1-247-833-91	CARBON	1.2K	5%	1/4W
R316	1-247-797-91	CARBON	39	5%	1/4W
R317	1-247-842-91	CARBON	3K	5%	1/4W
R318	1-247-833-91	CARBON	1.2K	5%	1/4W
R319	1-247-867-91	CARBON	33K	5%	1/4W
R322	1-247-797-91	CARBON	39	5%	1/4W
R402	1-247-831-91	CARBON	1K	5%	1/4W
R403	1-247-807-91	CARBON	100	5%	1/4W
R404	1-247-838-91	CARBON	2K	5%	1/4W
R405	1-247-847-91	CARBON	4.7K	5%	1/4W
R406	1-247-839-91	CARBON	2.2K	5%	1/4W
R407	1-247-847-91	CARBON	4.7K	5%	1/4W
R408	1-247-849-91	CARBON	5.6K	5%	1/4W
R411	1-247-831-91	CARBON	1K	5%	1/4W
R412	1-247-850-91	CARBON	6.2K	5%	1/4W
R413	1-247-850-91	CARBON	6.2K	5%	1/4W
		< TRANSFORMER >			
⚠T1	9-885-006-68	TRANSFORMER			

POWER BLOCK (MPN4901)

1-468-590-11 POWER BLOCK (MPN4901)
****
(Ref.No.: 5,000 Series)

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C5	9-885-006-73	ELECT	150uF		400V
C101	9-885-006-67	ELECT	330uF		35V
C111	9-885-006-66	ELECT	33uF		35V
C301	9-885-006-65	ELECT	680uF		25V
C306	9-885-006-66	ELECT	33uF		35V
C307	9-885-006-66	ELECT	33uF		35V
C401	9-885-006-67	ELECT	330uF		35V
		< DIODE >			
D4	8-719-901-33	DIODE 1SS133			
D5	8-719-063-16	DIODE HZS9B2			
D6	8-719-901-33	DIODE 1SS133			
D7	8-719-901-33	DIODE 1SS133			
D11	8-719-054-32	DIODE ERA15-06			
D12	8-719-054-32	DIODE ERA15-06			
D13	8-719-054-32	DIODE ERA15-06			
D14	8-719-054-32	DIODE ERA15-06			
D23	8-719-901-33	DIODE 1SS133			
D24	8-719-901-33	DIODE 1SS133			
D25	8-719-901-33	DIODE 1SS133			
D101	8-719-210-51	DIODE 21DQ10			
D102	8-719-063-04	DIODE MTZJ6.8A			
D103	9-885-006-59	DIODE HZ-18CP			
D104	8-719-901-33	DIODE 1SS133			
D110	8-719-901-33	DIODE 1SS133			
D301	9-885-006-58	DIODE ERB83-006			
D302	9-885-006-58	DIODE ERB83-006			
D313	8-719-901-33	DIODE 1SS133			
D316	8-719-901-33	DIODE 1SS133			
D401	8-719-210-51	DIODE 21DQ10			
D402	8-719-063-04	DIODE MTZJ6.8A			
D404	8-719-901-33	DIODE 1SS133			
D410	8-719-901-33	DIODE 1SS133			
		< FUSE >			
⚠F1	1-576-229-11	FUSE (T2.5A/AC250V)			
		< IC >			
IC302	8-759-234-89	IC TA76431S			
IC303	8-759-651-05	IC TA76431AS			
		< IC LINK >			
⚠P301	1-533-593-11	LINK, IC (2A/AC60V)			
⚠P302	1-533-592-11	LINK, IC (1.6A/AC60V)			
		< PHOTO COUPLER >			
⚠PC1	9-885-006-70	PHOTO COUPLER PC123			
⚠PC2	9-885-006-70	PHOTO COUPLER PC123			
		< TRANSISTOR >			
Q1	9-885-006-72	TRANSISTOR	2SK2717		
Q2	9-885-006-61	TRANSISTOR	2SC1741AS		
Q20	8-729-920-68	TRANSISTOR	2SA933S		
Q71	9-885-006-71	TRANSISTOR	2SB1488		
Q101	9-885-006-60	TRANSISTOR	2SB1642		
Q102	8-729-920-70	TRANSISTOR	2SC1740S		
Q103	8-729-920-70	TRANSISTOR	2SC1740S		
Q104	8-729-920-68	TRANSISTOR	2SA933S		
Q201	9-885-006-62	TRANSISTOR	2SJ525		
Q301	9-885-006-60	TRANSISTOR	2SB1642		
Q302	8-729-920-70	TRANSISTOR	2SC1740S		
Q303	8-729-920-70	TRANSISTOR	2SC1740S		
Q304	8-729-920-68	TRANSISTOR	2SA933S		
Q401	8-729-018-60	TRANSISTOR	2SD2012		
Q402	8-729-920-68	TRANSISTOR	2SA933S		
Q403	8-729-920-68	TRANSISTOR	2SA933S		
Q404	8-729-920-70	TRANSISTOR	2SC1740S		
		< RESISTOR >			
R5	1-247-862-91	CARBON	20K	5%	1/4W
R6	1-247-825-91	CARBON	560	5%	1/4W
R7	1-247-830-91	CARBON	330	5%	1/4W
R8	1-247-867-91	CARBON	33K	5%	1/4W
R9	1-247-807-91	CARBON	100	5%	1/4W
R10	1-247-850-91	CARBON	6.2K	5%	1/4W
R11	1-247-854-91	CARBON	9.1K	5%	1/4W
R12	1-247-861-91	CARBON	18K	5%	1/4W
R13	1-247-815-91	CARBON	220	5%	1/4W
R17	1-247-827-91	CARBON	680	5%	1/4W
R19	1-247-783-91	CARBON	10	5%	1/4W
R21	1-247-845-91	CARBON	3.9K	5%	1/4W
R23	1-247-879-91	CARBON	100K	5%	1/4W
R24	1-247-852-91	CARBON	7.5K	5%	1/4W
R25	1-247-873-91	CARBON	56K	5%	1/4W
R71	1-247-877-91	CARBON	82K	5%	1/4W

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Ref. No.	Part No.	Description			Remark
R72	1-247-871-91	CARBON	47K	5%	1/4W
R73	1-247-871-91	CARBON	47K	5%	1/4W
R74	1-247-897-91	CARBON	560K	5%	1/4W
R75	1-247-897-91	CARBON	560K	5%	1/4W
R101	1-247-841-91	CARBON	2.7K	5%	1/4W
R102	1-247-831-91	CARBON	1K	5%	1/4W
R103	1-247-801-91	CARBON	56	5%	1/4W
R104	1-247-838-91	CARBON	2K	5%	1/4W
R105	1-247-847-91	CARBON	4.7K	5%	1/4W
R106	1-247-838-91	CARBON	2K	5%	1/4W
R107	1-247-847-91	CARBON	4.7K	5%	1/4W
R108	1-247-833-91	CARBON	1.2K	5%	1/4W
R111	1-247-831-91	CARBON	1K	5%	1/4W
R112	1-247-847-91	CARBON	4.7K	5%	1/4W
R113	1-247-847-91	CARBON	4.7K	5%	1/4W
R203	1-247-851-91	CARBON	6.8K	5%	1/4W
R301	1-247-830-91	CARBON	330	5%	1/4W
R302	1-247-849-91	CARBON	5.6K	5%	1/4W
R303	1-247-839-91	CARBON	2.2K	5%	1/4W
R304	1-247-841-91	CARBON	2.7K	5%	1/4W
R305	1-247-831-91	CARBON	1K	5%	1/4W
R306	1-247-811-91	CARBON	150	5%	1/4W
R309	1-247-835-91	CARBON	1.5K	5%	1/4W
R310	1-247-823-91	CARBON	470	5%	1/4W
R311	1-247-830-91	CARBON	910	5%	1/4W
R312	1-247-768-91	CARBON	2.4	5%	1/4W
R313	1-247-831-91	CARBON	1K	5%	1/4W
R314	1-247-833-91	CARBON	1.2K	5%	1/4W
R315	1-247-831-91	CARBON	1K	5%	1/4W
R317	1-247-842-91	CARBON	3K	5%	1/4W
R318	1-247-833-91	CARBON	1.2K	5%	1/4W
R319	1-247-867-91	CARBON	33K	5%	1/4W
R321	1-247-823-91	CARBON	470	5%	1/4W
R322	1-247-809-91	CARBON	120	5%	1/4W
R402	1-247-831-91	CARBON	1K	5%	1/4W
R403	1-247-807-91	CARBON	100	5%	1/4W
R404	1-247-838-91	CARBON	2K	5%	1/4W
R405	1-247-847-91	CARBON	4.7K	5%	1/4W
R406	1-247-839-91	CARBON	2.2K	5%	1/4W
R407	1-247-847-91	CARBON	4.7K	5%	1/4W
R408	1-247-849-91	CARBON	5.6K	5%	1/4W
R411	1-247-831-91	CARBON	1K	5%	1/4W
R412	1-247-850-91	CARBON	6.2K	5%	1/4W
R413	1-247-850-91	CARBON	6.2K	5%	1/4W
		< SWITCH >			
⚠SW1	9-885-006-69	SWITCH (POWER)			
		< TRANSFORMER >			
⚠T1	9-885-006-74	TRANSFORMER			

Ref. No.	Part No.	Description			Remark
*	A-6065-676-A	SE-122 BOARD, COMPLETE (US, CND, AUS, PX)			
*	A-6065-683-A	SE-122 BOARD, COMPLETE (AEP, UK)			
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		(Ref.No.: 1,000 Series)			
		< CAPACITOR >			
C501	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
		< CONNECTOR >			
CN502	1-573-383-11	PIN, CONNECTOR (PC BOARD) 2P			
CN503	1-815-569-11	CONNECTOR, FFC/FPC 7P			
		< JUMPER RESISTOR >			
JR501	1-216-295-11	SHORT	0		
		< PHOTO INTERRUPTER >			
PH501	8-749-924-30	PHOTO REFLECTOR	GP2S28		
PH502	8-749-924-18	PHOTO INTERRUPTER	RPI-1391		
		< TRANSISTOR >			
Q501	8-729-120-28	TRANSISTOR	2SC2412K-T-146-QR		
		< RESISTOR >			
R501	1-216-075-00	METAL CHIP	12K	5%	1/10W
R502	1-216-033-00	METAL CHIP	220	5%	1/10W
R503	1-216-049-11	RES-CHIP	1K	5%	1/10W
R504	1-216-027-00	METAL CHIP	120	5%	1/10W
R505	1-216-043-91	RES-CHIP	560	5%	1/10W

Ref. No.	Part No.	Description			Remark
*	A-6065-675-A	SW-353 BOARD, COMPLETE (US, CND, AUS, PX)			
*	A-6065-691-A	SW-353 BOARD, COMPLETE (AEP, UK)			
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		(Ref.No.: 3,000 Series)			
		< CONNECTOR >			
* CN651	1-564-013-11	PIN, CONNECTOR 3P			
		< RESISTOR >			
R651	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R652	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R653	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R654	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R655	1-216-081-00	METAL CHIP	22K	5%	1/10W
		< SWITCH >			
S651	1-771-349-21	SWITCH, KEYBOARD (TITLE)			
S652	1-771-349-21	SWITCH, KEYBOARD (DVD MENU)			
S653	1-771-349-21	SWITCH, KEYBOARD (↩ RETURN)			
S654	1-771-349-21	SWITCH, KEYBOARD (ONE/ALL)			
S655	1-771-349-21	SWITCH, KEYBOARD (REPEAT)			
S656	1-771-349-21	SWITCH, KEYBOARD (SHUFFLE)			
S657	1-771-349-21	SWITCH, KEYBOARD (LOAD)			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS	
		**************	
⚠9	1-769-744-91	CORD, POWER (AEP, UK, PX)	
⚠9	1-783-531-31	CORD, POWER (US, CND)	
⚠9	1-790-588-11	CORD, POWER (AUS)	
10	1-757-749-11	CABLE, FLEXIBLE FLAT (FAM-008)	
11	1-757-750-11	CABLE, FLEXIBLE FLAT (FCM-014)	
18	1-757-748-11	CABLE, FLEXIBLE FLAT (FAE-006) (AEP, UK)	
56	1-757-753-11	CABLE, FLEXIBLE FLAT (FIR-001)	
59	1-757-752-11	CABLE, FLEXIBLE FLAT (FIF-001)	
63	1-786-131-11	SWITCH, TACTILE	
118	1-757-751-11	CABLE, FLEXIBLE FLAT (FCS-005)	
163	1-466-996-21	ENCODER, ROTARY	
173	1-757-754-11	CABLE, FLEXIBLE FLAT (FMM-036)	
174	1-757-755-11	CABLE, FLEXIBLE FLAT (FMD-025)	
⚠181	8-820-144-06	OPTICAL PICK-UP KHM-240AAA/J1RP	
183	1-961-112-11	HARNESS, BOARD IN (LE-054)	
M851	A-4660-977-A	MOTOR ASSY, LOADING	
M951	1-541-632-11	MOTOR, DC (TURN TABLE)	

ACCESSORIES & PACKING MATERIALS
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Ref. No.	Part No.	Description	Remark
	1-476-604-21	COMMANDER, STANDARD (RMT-D130A) (US, CND, PX)	
	1-476-605-41	COMMANDER, STANDARD (RMT-D130P) (AEP, UK)	
	1-476-605-51	COMMANDER, STANDARD (RMT-D130O) (AUS)	
⚠	1-569-008-21	ADAPTOR, CONVERSION 2P (PX)	
	1-751-271-12	CORD, CONNECTION (STEREO AV CABLE 1.5m)	
⚠	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (UK)	
	3-067-827-11	MANUAL, INSTRUCTION (ENGLISH) (US, CND, PX)	
	3-067-827-21	MANUAL, INSTRUCTION (FRENCH) (CND)	
	3-067-827-31	MANUAL, INSTRUCTION (ENGLISH) (UK)	
	3-067-827-41	MANUAL, INSTRUCTION (FRENCH) (AEP)	
	3-067-827-51	MANUAL, INSTRUCTION (GERMAN) (AEP)	
	3-067-827-61	MANUAL, INSTRUCTION (ITALIAN) (AEP)	
	3-067-827-71	MANUAL, INSTRUCTION (DUTCH) (AEP)	
	3-067-827-81	MANUAL, INSTRUCTION (SPANISH) (AEP)	
	3-067-827-91	MANUAL, INSTRUCTION (ENGLISH) (AUS)	

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